Fourteenth Year of Publication

Industrial FINISHING

Reg. U. S. Pat. Office

Devoted to Product Finishing in the Factory

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"A DeVilbiss Expert Can Help You With That Spray Problem"

Leadership is won by building products that give better service. Leadership exacts many penalties. But it also brings many benefits. One of the greatest is new business created by the praise of buyers for the products of a leader.

For many years DeVilbiss has maintained unquestioned leadership in the spray-painting field—servicing the nation's greatest but never forgetting its smallest user. When you are told that "A DeVilbiss Expert Can Help You With That Spray Problem," it is a sincere recommendation invariably based upon some actual experience.

DeVilbiss Experts know every phase of spray-painting—the production, cleaning, and regulation of air—the feeding of air and material to the spray gun—the ventilation of the painting area. These men are at your disposal. No obligation! If they can't solve your problem, they'll refer it to DeVilbiss Engineers. And they'll create for you exactly what you need . . . The DeVilbiss Company, Toledo, Ohio.

The most advanced type of

Spray-Painting and Finishing Equipment,
Exhaust Systems,
Air Compressors, Hose and Hose Connections.

DE VILBISS SPRAY SYSTEMS

1888 . FIFTY YEARS OF QUALITY PRODUCTS . 1938

Letters from Readers

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Chrome on Wood

We are unable to find a source of supply for a finishing material that will finish chrome on wood. The usual powdered aluminum paints are too dull; our customer specifies that we produce a high sheen. We will certainly appreciate your putting us in touch with someone who makes a material of this type.—N. D. Co. (Chair Mfr.).

Tumbling Machines

We would appreciate the names of a number of companies who manufacture tumbling machines for polishing metal goods. We now have a number of tumbling machines using sawdust for the cleaning and polishing agent. These machines were made by a concern in Cincinnati, Ohio.—L. C. Co. (Small Metal Goods).

Why Lacquered Brass Tarnishes

Referring to the question, "Why Does Lacquered Brass Tarnish," published in Sept. issue, pages 44 and 46, about two years ago I experienced the same kind of difficulty. I was applying lacquer to brass goods which had been prepared in about the same manner as outlined in your article. The difficulty was overcome by giving the parts a dip in lacquer thinner after they came from the hot drier. This seemed to overcome the tendency toward lack of adhesion and after-spotting. Possibly the lacquer they are using is not a type that entirely resists moisture. Thin films are not very protective where there is high humidity, unless the lacquers are formulated to resist this type of exposure.

I have in mind a clear liquid that would not only give them a good film coverage, but would also give them waterproofness and resistance to acids and handling.—A. H. Gabel.

Veneer Checking

We are interested in your article on Veneer Checking, published in Aug. issue, page 38. Please send us the name of the manufacturer making the material described in this article.—D. N. Co. (Furniture).

The manufacturer is The Liquafill Mfg. Co., Dayton, Ohio.—Ed.

Portable Baking Lamps

I have to thank you for your attention to my inquiries relative to spray equipment and portable baking units, but have to advise with regret that up to the time of writing I have not received any further communications in regard to the baking units. Dulux stoving (synthetic bake finishing) practice has developed to a remarkable degree in Australia. Refrigerator manufacturers, cycle

NUOIL!! FILLERS

POSITIVELY the greatest improvement ever made in Wood Filler. Wipe "with the greatest of ease," after THIRTY MINUTES or even ONE HOUR. Do a BETTER job with LESS material and about HALF the work. Available in standard or special colors.

AND OTHERS

WATEROIL STAINS

Alone in their class. Do not precipitate or change with age. Fast to light, non-bleeding, quick drying and non-grain-raising.

NO. 1900 CLEAN-UP POLISH

Absolutely eliminates bluish bloom or haze—leaves surface clear, clean, free from dust collecting or finger marking.

RUB-LESS LACQUERS
(Licensed)

Guaranteed better, smoother flow. Require less rubbing. Practically water white—extremely resistant to alcohol and checking.

DU BAR BLEACH

Single application — the closest to perfection and the most fool proof. If you have bleaching problems we **guarantee** DuBar will solve them.

For Liberal working samples of any items listed above, write at once to

V. J. DOLAN & COMPANY, INC.

Mfrs. of "Unquestionable Quality" Wood Finishing Supplies

1830-32 NORTH LARAMIE AVENUE CHICAGO, ILLINOIS

FOR METAL CLEANING

. . . specify

SUNOCO SPIRITS

An efficient and economical solvent that penetrates the minute pores of the metal . . . rids them of all oil and grease . . . and leaves the metal sparkling clean and ready for the next process.

For full details on SUNOCO Spirits write to:—

SUN OIL COMPANY
Dept. S-1
Philadelphia, Pa.

SUNOCO Spirits

PETROLEUM PRODUCTS FOR ALL INDUSTRIES

builders and automobile plants are all using this system.

The custom or refinish shops and small manufacturers desire to use this method but production does not warrant the installation of stoves (ovens) so there is a tremendous market for something efficient at much less cost. Will you kindly urge your friends (Mfrs. of portable baking lamps) to communicate with me by return mail?—Les N. Whibley, South Australia.

Glass Marking Inks

On page 20, August 1938 issue of INDUSTRIAL FINISHING, there is an article entitled "Glass Marking Inks" developed by the Westinghouse Electric & Mfg. Co. I shall be pleased if you will advise me which division of the Westinghouse Co. I should write in order to obtain information relative to these inks.—A. N. Co. (Instruments).

We have been directing the several inquiries on this item to the East Pittsburgh, Pa., office.—ED.

Porcelain Repair

I have read in your magazine, INDUSTRIAL FINISHING, that there are several types of porcelain repair finish on the market. Will you please send me the name of the maker of the finish you referred to in your May issue?—T. R. Corp. (Refrigerators).

Names have been furnished.—ED.

Finish Novelties

I would appreciate it very much if you would send me a sample copy of your INDUSTRIAL FINISHING. If this magazine gives some information as to how to finish novelties with different finishes, such as antique and so forth, I will subscribe to it.—W. N. Co. (Novelties).

Who Will Spray Large Valances?

We are writing to ask for names and addresses of two or three local concerns (New York City) who are in position to spray dye onto cloth. We have 19 large valances over our showroom windows which cannot be

try to scratch or mar it!

Here it is—a lacquer finish that cannot be marred or scratched with the thumbnail, or other destructive agencies—a much tougher piece of goods than the ordinary lacquers. It produces a splendid transparent finish of full depth on maple, walnut, gum, mahogany and other cabinet woods. . . . It is made in either the Clear Gloss Rubbing or the Satin Finish. Mar Proof Lacquer Sealer is recommended for the first coat.

THE SCHAEFER VARNISH CO., INC.
LOUISVILLE, KY.

QUART SAMPLES FREE

Make your own tests— Convince yourself

S-1230-H NOROY LACQUER SANDING SEALER

Contains over 27% solids. Sands easily in 20 minutes. Attractively priced and economical to use.

W-1031 NOROY GLOSS WOOD LACQUER

Contains 37.5% solids. Rubs and polishes to a high gloss. Produces a durable and marproof finish.

TRY OUR C-210 SHELLAC SANDING SEALER FOR ECONOMY AND GOOD RESULTS!

Write for free quart samples

RUDD LACQUER & SEALER — CORP. —

80 CLIFF ST., NEW YORK, N. Y.
FACTORY — RAHWAY, N. J.

taken apart and dyed because the cloth will shrink and will prevent its being replaced on the valance boards. We have been told that they could be sprayed with dye, but are unable to locate a concern who does this work.—Cadillac Motor Car Division, New York Branch.

Gets Last Drop

We notice, on page 62 of your issue for September, an article regarding a special pump for draining the last pint or quart of material from the barrel. Please send us further information.—P. Y. Co. (Toys & Furniture).

It's Coil Mfg. Co., Evansville, Ind. —ED.

Spray Booth Coating

Could you let us have the name and address of a concern that manufactures cleaning compounds used as a temporary coating for the interiors of spray booths? We seem to recall an article in this connection in a previous issue of INDUSTRIAL FINISHING, but are unable to locate it.—S. C. Co. (Automatic Scales).

Names and addresses have been furnished to this inquirer.—ED.

Plating; Anodizing

Could you please let me know where I could get information in regard to plating, anodizing and other metal processes in the aircraft finish industry.—A. A. L.

Continuous Washing Machine

We would like to get in touch with the manufacturer of a continuous washer-type tumbler which would clean, polish and dry wire goods in one operation without sawdust.—H. R. Co. (Wire Products).

Buffing Lacquered Cabinets

About 2 years ago you published an article in your magazine on rubbing lacqered cabinets with buffing wheels. We would appreciate receiving a copy of this article, if it

(Continued on page 53)

As STYLE *differs from* FASHION

So . . . .

Stille-Young lacquers, stains, fillers, sealers, enamels differ from other types of material. Specify Stille-Young so that your finish may be properly *styled* for *beauty, durability and value.*

THE STILLE-YOUNG CORPORATION

Manufacturers • CHICAGO, ILLINOIS

STILLE-YOUNG

dependable LACQUERS

Use of Masking Tape in

BY JACK EATON
Manager of Finishing Division
Lockheed Aircraft Corporation

BACK IN THE EARLY DAYS of automobile finishing, when lacquer and spray equipment were still in their infancy, the need for masking tape developed. The spray method of applying lacquer necessitated the use of some protective medium such as paper shields fastened in place with masking tape to prevent overspray in painting two-color jobs.

Glue-backed paper (gummed sealing) tape was the only tape available to the automobile refinisher. This gummed sealing tape was a poor substitute for our modern masking tape. Sometimes the glue caused the freshly applied lacquer film to check, and occasionally it caused slight discolorations in the lighter colored paint jobs. This was objectionable.

An improved pressure-sensitive tape was then developed. It was far superior to both the gummed paper sealing tape and to the cloth-backed adhesive tape because neither of these tapes is flexible enough to use for anything but straight lines. The flexible crepe-paper tape came with a "holland" backing—a thin protective that prevented the gummed side from sticking to the back when the tape was put up in rolls. However, this tape was very sensitive to atmospheric changes, and often it deteriorated when stored for a considerable length of time.

(At left, opposite page) This entire airplane was finished in white lacquer over zinc chromate primer. It was striped in blue, with gold outline. Operator is now applying tape over gold for the outline.

(Illustration at right) Blue lettering over white background, with gold outline. The outline will be brushed by hand.

the Painting of Airplanes

In the early days of aircraft finishing, Department of Commerce registration numbers were laid out and painted on aircraft surfaces by hand. This work generally required the services of an expert sign painter and involved the use of slow-drying materials. It was not suitable for rapid or economical production.

Individual Gummed Letters

Then the individual gummed letters were developed and adopted. To use these gummed letters and numbers we would spray the area to be lettered, using the color specified for our letters or numbers. When this paint was dry we would lay out the space to be occupied by letters, after which we would carefully apply those gummed letters—first being careful to peel off the protective covering from their gummed sides. With the gummed letters all in position, no further masking was required. We were ready to spray the regular paint that was to cover the fuselage or wings. When this color became dry we peeled off the gummed letters and the job was finished—with the characters sharply defined in the color that we sprayed over the area.

This system was effective for a short time and it is still being used by one of the major aircraft manufacturers on the Pacific Coast. However, we felt the urge to adopt and use something better because: 1) this method required a large inventory of stencils — generally three full sets; 2) stencils were

often torn while removing the protective covering from them; 3) when applying these stencils over curved surfaces they generally became more or less distorted, as there was no stretch to them.

Lead Foil Process

The lead foil process was used by a large number of sign painters and also by some of the major oil companies in California. It was effective in producing some beautiful work. Lead foil sheets could be purchased in different sizes, generally 9x12-in. They were applied over a moistened surface and rolled with a squeegee hand roller to press them firmly into place on the surface to be lettered. Moisture was removed with a chamois skin. The foil covered surface was then marked by holding a perforated paper stencil over it and pouncing the perforations with a ball of cotton dabbed in talcum powder or finely powdered chalk.

With the stenciled outline transferred to the lead foil (the pounce marks remained plainly visible) the stencil cutter would skillfully cut the lead foil with a dull knife and carefully remove the cutout letters, leaving an open stencil ready to be sprayed. The lead foil remaining on the surface served as the masking around each letter or number. If we did the job skillfully and accurately with a dull cutting tool, we would not damage the painted surface by cutting the stencil over it, as we could tell by the feel of it when we were cutting just enough to cut through the lead foil. After the sprayed letters were dry the lead foil mask was carefully peeled from the surface, leaving the stencil - sprayed characters clean and sharply defined—a very workmanlike job.

Masking Paste

Masking paste was and still is used for certain types of masking. Sometime back it was used a great deal for sign work, where a spray material was being employed. In using masking paste, the operation is somewhat slower, as it requires drying time before the paste can be removed. In some cases, where the work is not immediately cleaned up after the operation, water spotting occurs.

Modern Masking Tape Now Used Extensively

In our present system the latest improved type of masking tape is used for all striping, Department of Commerce registra-

Lockheed insignia after spraying; also K. L. M. insignia belonging to Royal Dutch Airlines. Stencils cut from masking tape.

Close-up view of workman cutting out Lockheed insignia. Pattern is made from sheet brass or copper, using 6-in. masking tape. Scrap dural is used for cutting plate. Safety solvent cans appear in the background. Solvent is used in cleaning operations.

tion marks, sign and stencil work. It has proved to be very efficient, although I believe that some time in the near future, with further development in adhesive gums, we may be able to reduce still further the time required for our masking and stenciling operations.

At the present time, we have six operators working with masking tape. Each man has his specific work laid out for him, such as fuselage striping, Department of Commerce numbers, insignia, sign or art work, height and line striping, and supplying the necessary aprons (large sheets of paper) for masking work.

This modern masking tape is available in widths ranging from ¼ to 26-in. wide. When we have a difficult or complicated insignia to reproduce, we generally use wide tape and make cutout stencils of it. For a cutting guide, we use either a perforated paper pattern and pounce the outline onto the back of the tape (as heretofore described) or we make a pattern of sheet metal (usually brass or copper) and lay this over the back of the tape to guide our knife while cutting it. Our cutting board, on which we lay the tape, adhesive side down while cutting out the stencil, is either a plate of glass or a sheet of duralumin. When a gummed stencil is completely cut it is ready to be laid onto the surface to be painted, and then rolled out flat ready for spraying.

If the insignia is to be in two or more colors, the divisions are easily masked off for spraying in the various colors. Where we have a run of insignia for Army 'plane wings and fuselages, we find it more convenient to use a pounce pattern with suitable cutout holes

Periodic inspection is made of all spray stencil operations to check wearability. This stripe and the insignia have been in service for two years and have withstood atmospheric changes—complete tape job.

for guides to enable us to place the stencil in the proper place. It is then pounced. After this operation a less experienced operator can readily follow the dotted pounce lines.

Modern masking tape has enabled us to greatly reduce the time on many operations in the finishing department. There are tapes for masking, striping, and color separation that will withstand baking temperatures; also we have tapes for sealing; for protecting surfaces; for holding loose parts; for identification; for many electrical constructions; and there are double-coated tapes for holding materials together or in place before stitching.

Selection of Industrial Tape

Generally speaking, there are two important things to consider when selecting an industrial tape: 1) Type or kind of backing, and 2) the nature of the adhesive which it carries. Considering backing first, some of the most important factors are: 1) Thickness, 2) nature of material constituting the backing, such as paper or cloth, 3) tensile strength, 4) flexibility, 5) distensibility or stretch under tension of application, 6) imperviousness to various solvents used in finishing materials, 7) ability to produce sharp, clean-cut edges when converted into customer rolls, 8) aging problems under average storage conditions prior to customer purchase.

These properties and considerations depend upon selection of paper meeting certain specifications; and also the type and kind of treatment imparted to the paper before the adhesive is applied.

Adhesive Used on Tape

The second phase constitutes the properties of a pressure-sensitive adhesive and the methods by which they are obtained. The most popular type of pressure-sensitive adhesive employs some form of rubber as a base, to which is added other ingredients to achieve working properties for any specific use or application. Satisfactory pressure-sensitive adhesives can be developed from either smoked sheets, or latex crepe, as well as a few other kinds that can be employed if desired. Most pressure-sensitive adhesives carry one or more pigments such as zinc-oxide or whiting to impart certain working properties to the adhesive compound. In some cases they reinforce the rubber compound, while in others they are employed either to bulk or extend it. It is also appreciated that there can be a definite chemical reaction forthcoming from certain pigments on which several properties of the finished tape depend.

Another necessary ingredient employed might be termed tack-producer. This covers a wide range of materials acceptable for this purpose, the most common one

being resin. Rubber, pigment, and tack-producer resin, therefore are usually the three fundamental ingredients involved when developing a pressure-sensitive adhesive. Careful selection of the three fundamental ingredients must be considered when developing pressure-sensitive adhesive tapes for the various uses they now serve. Each special use requires certain characteristics or specifications of its own. Aging life, softening point, adhesive value, and other properties can be controlled within reasonable limits. The manufacture of industrial tape is tending more and more in the direction of tailor-made constructions.

As I mentioned before, the purpose of treating and processing raw paper as received from the mill is to unify the fibers and develop imperviousness to various solvents employed in finishing materials. Unification of the fibers in the paper backing must be secured in order to prevent splitting or delamination of the paper or fiber backing at the time the roll is unwound by the user. The unwinding of a roll of pressure-sensitive tape necessitates the separation of the adhesive from the backing surface opposite to that on which the adhesive is coated, and the fibers must be bonded together sufficiently to resist this strain of unwinding. There is a wide variety of bonding agents which may be employed, but the selection of any one material for this purpose involves other considerations, such as flexibility and imperviousness to the various solvents carried by lacquers, synthetic enamels and other finishing materials. This selection must also include the problem of not developing any adverse effect upon the pressure-sensitive adhesive with which it is associated.

Caution should be used in applying masking tape on parts that go into the baking oven. If masking tape cannot be removed before work enters the oven, a special type of tape should be supplied by the vendor, as the conventional type tape will readily stick to the work and make it very messy. Often, when it is used over name plates, the heat from the oven will tend to remove the pigment from the tape and deposit it on the surface. This discoloration is very hard to remove.

On this 14-passenger Trans-Canada Airliner, markings are all put on with masking tape. The insignia on its nose is a decal furnished by the Trans-Canada Airways.

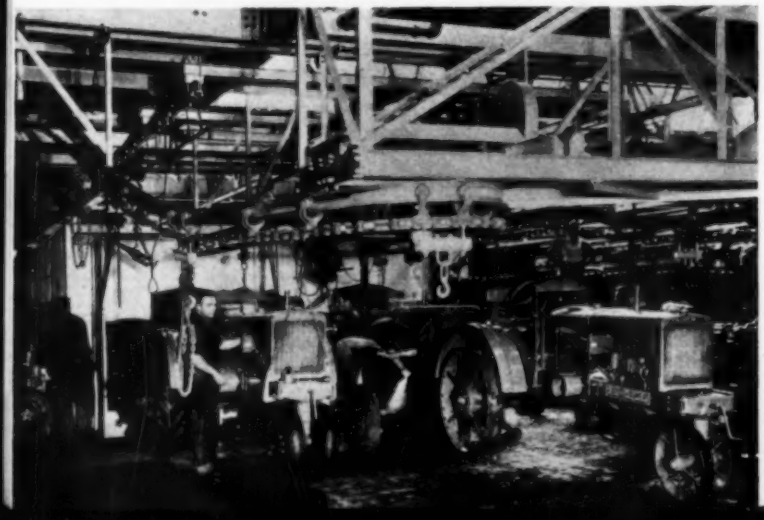
440 Tractors Daily

IS THE CAPACITY OF NEW TWO-UNIT CLEANING-FINISHING-BAKING SYSTEM

THE COMPLETE cleaning-finishing-baking system now operating in the new Allis-Chalmers tractor plant, at West Allis near Milwaukee, Wisc., is a model of efficiency which embodies many radical departures from previous practice in finishing products of that type and size. The layout of the finishing system was not restricted by existing building characteristics and other factors which usually govern plans for such installations to be made in plants already erected. The section of the building which houses the new Mahon Finishing System was designed around the finishing equipment, with all necessary provisions incorporated in the original plans—the entire tractor plant being of new, modern construction.

The cleaning-finishing-baking system consists of two complete units—one on the east side of the building and one on the west side. Each unit accommodates two separate production lines. Overhead continuous trolley conveyors carry two lines of complete tractors through each unit of the system.

Each unit consists of a 2-stage washing machine, four spray booths and a baking oven. The first stage of the washing machine cleans the tractor thoroughly with an alkali solution sprayed at a rate of 1200 gallons per minute, at 180°F. The second stage rinses the tractor in a similar manner except that clear clean hot water is used. Reservoirs for



Routex Contest Extended to November 15

A PRIZE CONTEST OPEN TO EMPLOYEES OF ANY FIRM USING ROUTING ENAMEL

Reliance Offers a . . .

$100.00 PRIZE

for the best method for using

ROUTEX

the Quick Drying Route Enamel

RULES OF THE CONTEST: First—Mail the enclosed card *completely* filled out asking for a sample of ROUTEX, the Quick Drying Route Enamel. Second —Make use of this sample on any routed design and then write down as briefly as possible the method you used and the equipment you used.

Method used for applying ROUTEX should accomplish the following:

A—Quality Results
B—Low Material Cost
C—Low Labor Cost
D—High Production

Your contest entry should be written on plain paper without any identifying marks, accompanied by a letter giving your name, company name and address. Send these to Contest Editor, Industrial Finishing Magazine, Indianapolis, Ind.

The contest editor will then give your entry a serial number so that contestant's name will remain unknown to the judges. The Editors of Industrial Finishing Magazine will judge this contest and their decision will be final.

YOUR ENTRY MUST BE RECEIVED BY NOVEMBER 15, 1938

in order to qualify for the prize and you will be notified shortly thereafter if you are the lucky winner. Enter *now* by mailing the postcard. Your can of ROUTEX will be sent you and full contest instructions.

USE THE ENCLOSED POSTCARD

RELIANCE VARNISH CO.

INCORPORATED

LOUISVILLE, KENTUCKY

both tanks have large capacities, the water being heated by steam in external instantaneous hot-water heaters.

Spray booths are of latest hyro-filter type designed and especially arranged to meet perfectly the particular requirements of this system. Two spray booths are installed for each conveyor line. These booths are staggered so that one spray man paints one side of the tractor and another in the next booth, located on the opposite side of the line, paints the other side.

An interesting feature of this installation is the reservoirs or water tanks for the hydro-filter units. These reservoirs extend completely through u n d e r the tractors on the conveyor line, thereby permitting the overspray, which would otherwise fall on the floor, to be picked up on the surface of the water. Another interesting detail is the recession of all reservoirs for the washing machines and the spray booths below the floor level. Pumps, strainers and other accessories are all located in pits in the floor.

Baking Ovens
Overhead Trolley Conveyor

Baking ovens are designed with silhouette sleeves at each end which closely fit the outline of the t r a c t o r s and which are long enough so that before one tractor leaves it another closes the opening. This method of sealing the ends of the oven permits oven heat to extend from one end of the oven to the other without those heat losses that generally occur at each end of this type of continuous oven which does not have a bottom opening or natural heat seal. Ovens are heated with butane gas with a recirculating type of heater. Each oven accommodates two conveyor lines and the temperature is automatically maintained within a 5° range.

Tractors are assembled complete (less their wheels) and are block tested and "run in" before they are placed on the conveyor line which carries them through the finishing system. With the exception of wheels and paint the tractors are ready to leave the plant before they enter the finishing system. This installation presented several problems which were successfully solved by Mahon engineers.

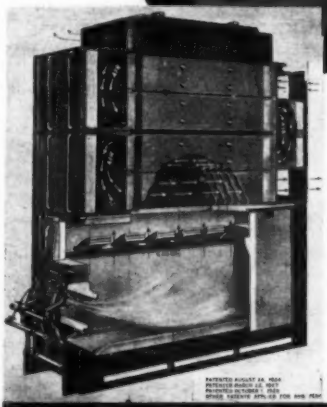
Considering that the tractors are ready for operation before entering the finishing system, the problems included keeping water out of gas tanks, crank cases and ignition systems, and maintaining a temperature in the oven which would not be detrimental to oil, grease and other materials that are vulnerable to excessive temperatures.

One of the important features of the complete installation is the overhead trolley conveyor. Many of the tractors are equipped with pneumatic tires which would interfere with spray painting operations. This and the objection to having the tires subjected to the cleaning solution and the oven temperatures were overcome by the use of overhead conveyors which suspend the tractor off the floor, giving easy access to the under side of the tractor in the spray booths.

After leaving the baking oven, the wheels are installed and the tractor is set upon the floor by a dip in the monorail track. Tractors are then driven out of the plant under their own power.

Let us adapt your existing ovens to....

THE NEW RAPID BAKE SYNTHETICS



ROSS AIR HEATERS will make your existing ovens adaptable to the new conditions of time and temperature required by these new finishes.

ROSS OVENS are designed to meet all demands of time, temperature and handling in the use of the new as well as the old coating materials.

If you are contemplating new oven or heating equipment, Ross service and experience are at your command. Let us have your problem. We'll solve it for you.

J. O. ROSS ENGINEERING CORPORATION

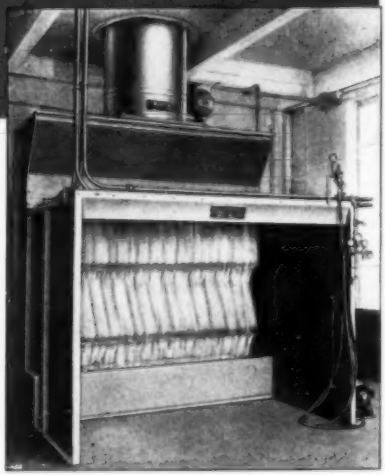
350 MADISON AVENUE, NEW YORK

201 N. Wells Street, CHICAGO — 12953 Greeley Avenue, DETROIT — 2860 N. W. Front Avenue, PORTLAND, OREGON

In Canada, ROSS ENGINEERING OF CANADA, LIMITED, Dominion Square Building, Montreal

News From Spray Headquarters

New DYN



Binks floor type spray booth showing new DYNAPRECIPITOR Unit with Split Water Curtain.

FEATURES

1. Has no nozzles to clog or wear out.
2. Split Water Curtain provides Two exhaust suction points, thereby equalizing velocity over face area of booth. This eliminates dead pockets found in the ordinary water wash booth.
3. New Precipitor plates are self-cleaning.
4. Gives greatest possible efficiency in elimination of all types of paints, synthetic enamel, vitreous enamel, etc., from spray fumes. In many cases it is possible to reclaim and reuse the pigment thus washed down into the collecting pan of the unit.
5. Very economical to operate.
6. Cleaning costs cut to a minimum. Front surface of unit, exhaust stack and fan blade all left clean by efficient water action.
7. Special eliminator plates cut water loss to a minimum.

Binks SPRAY SYSTEMS

BINKS MANUFACTURING CO

3114-40 CARROLL AVENUE

NEW YORK
126-30 Lafayette Street
Phone: Canal 6-4640

Telephone—Van Buren 4200

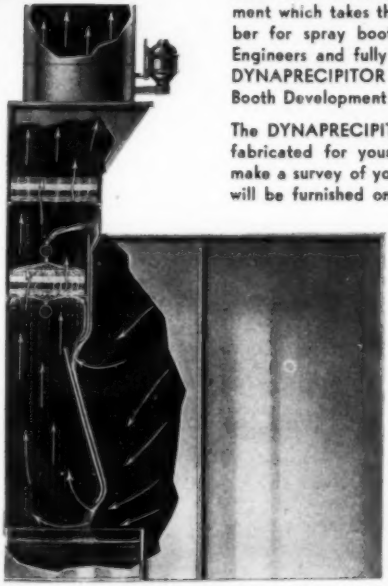
DETROIT
2870 East Grand Boulevard
Phone: Madison 7207

Philadelphia—Pittsburgh—Cleveland—Milwaukee—Boston—Los Angeles—

BINKS Announces DYNAPRECIPITOR

Latest news from Spray Headquarters is the announcement of Binks new DYNAPRECIPITOR, a radically new development which takes the place of the ordinary water wash chamber for spray booths. Originated and developed by Binks Engineers and fully covered by patents applied for, the new DYNAPRECIPITOR is we believe, the outstanding Spray Booth Development of the last few years.

The DYNAPRECIPITOR must be individually engineered and fabricated for your plant. Send for our representative to make a survey of your needs. Complete prices and blue prints will be furnished on request.



Cut-away view showing Precipitor plates, Split Water Curtain, and how stream of water is directed to curtain.

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Binks SPRAY SYSTEMS

OPERATION AND CARE OF *Spray Guns*

BY F. R. BOYNTON
Foreman Finisher

PERFORMANCE of the spray gun is of utmost importance in the application of surface coatings. A modern spray gun will do its work remarkably well and will give years of satisfactory service if it is only given just ordinary care and attention — but with regular inspection and the prompt replacement of parts when needed, it will last indefinitely.

A suitable type of spray gun is now available for every specific purpose. Hand spray guns range from the small cup types to large guns for synthetic enamels, each doing efficiently the job for which it was designed.

The staining gun is used for spraying various types of stain; it should receive special attention as this important operation requires considerable skill and clever manipulation by the operator. The gun used for staining should not be held too close to the work, or streaking will result. It is better to keep the gun well away from the piece being stained so that only a moist coat will be applied. In this way better uniformity will result and less stain will be used.

Immersing the gun in thinner or alcohol is not good practice, as this produces a dark corrosive appearance on the aluminum castings—especially if the gun is repeatedly left in these liquids overnight. It is best to place thinner in a container and spray this into the booth, forcing the liquid back into the container at intervals. This insures a clean fluid passage in both hose and gun. The outside of a spray gun can be readily cleaned by placing the gun in toluol for a few minutes and then scrubbing it with a brush.

Clean and Inspect Spray Guns Twice a Week

If the gun is in constant use, it should be taken completely apart and thoroughly cleaned and inspected twice a week. Any new parts that may be needed should be installed at the time of this inspection. The operator soon becomes familiar with the mechanism and the function of the various parts of his spray gun. This enables him to replace parts during working hours, if necessary, with a minimum loss of time. An

Another Achievement in FINISHING Equipment ENGINEERING

Completely assembled Tractors emerging from the Mahon Finishing System at the Allis-Chalmers Plant, Milwaukee, Wis. The Tractors are set upon their own wheels by a dip in the conveyor line—a flip of the crank starts their engines and they are driven away under their own power.

At the Allis-Chalmers Tractor Plant Mahon engineers designed and installed a complete new finishing system including cleaning, drying, spraying and baking operations on complete farm tractors. The tractors enter the finishing system completely assembled ready to run (except for rubber tires on those so equipped) with gasoline in the tanks and oil in the crankcase. This proposition of finishing completely assembled tractors presented many problems which were successfully solved by Mahon engineers with a tremendous saving in finishing costs. Let Mahon engineers study your finishing requirements . . . consultation will not place you under any obligation—write today.

THE R. C. MAHON COMPANY

DETROIT — — CHICAGO

Designers and Manufacturers of Metal Parts Washers, Annealing Machines, Rust-Proofing Machines, Hydro-Filter Spray Booths, Drying and Enameling Ovens, and many other Units of Special Production Equipment.

MAHON

efficient operator keeps his spray gun clean at all times, thereby eliminating any trouble due to caked material collecting on the spray head.

Strain Material; Have Extra Guns; Use Right Air Pressure

Loss of time can be avoided by carefully straining materials to be sprayed. It is well to make this a regular routine practice as it contributes to better and smoother finishing. Having extra guns on hand will save much time in the finishing room. There should be at least two extra guns in any finishing room; also, it is a good plan to have at least two cup containers available, as these are real time savers.

Manufacturers of spray guns have prepared charts that explain in detail all about the ordinary troubles that one encounters when using a spray gun. Every spray operator who is not familiar with one of these charts should get one and keep it for future reference so he will be able to recognize certain troubles and know how to make necessary adjustments.

Spraying lacquers are sometimes more or less troublesome. In order to turn out a first class job, it is well to use an air pressure of 65 to 70-lbs., and hold the head of the spray gun about 8-in. from the surfaces being sprayed. Apply a full wet coat so it will level out to make a smooth full-coverage job.

The ordinary spray gun can be converted into an effective spatter gun if one is needed and if there is not enough of this kind of work to warrant the purchase of a regular spatter gun. The operater simply puts in a large fluid tip and cuts down the air pressure so the fluid will come out in drops instead of being broken up or atomized. With a little practice an ordinary spray operator will be able to produce a first class spatter finish. He should use a gravity container to hold the material while doing spatter work.

Pressure equipment goes a long way toward making possible more and better production as it permits continuous spraying and an even flow from the spray. Really, the latest improved equipment is needed to meet the requirements that are demanded from the finishing room today. Some concerns make the mistake of keeping certain spray equipment in service so long that it becomes obsolete and therefore costly when compared to the more improved equipment that their competitors are using.

Hilo Sales Appointments

Mr. Milton T. Vreeland, formerly with Glidden Co. as sales representative, has joined the sales staff of the Hilo Varnish Corporation, 44 Stewart Ave., Brooklyn, N. Y. Mr. Vreeland will operate in the Conn. territory, as well as part of Massachusetts.

Mr. Max Alberts has joined the Hilo organization in the capacity of trade sales representative in Texas.

Mr. Roy Teer has been appointed sales representative in New Orleans, La., and vicinity.

Woodfinishing Products Co. Adds Technical Consultant to Staff

The Woodfinishing Products Co. of New York City and Winston-Salem, N. C., announce the appointment of Mr. Charles T. Young of 1205 Blaine St., High Point, N. C., to their staff as technical consultant and service man. Mr. Young has spent his entire business life in the furniture industry where he is well known. He has been assigned to service furniture manufacturers of the south.

That Final Hand Sanding

IN THE WHITE AND BETWEEN COATS

BY FRANK V. FAULHABER

IN ONE large factory, famed for its production of fine furniture, a finisher recently refused to begin work on a certain run of cabinets delivered to him in the white, because he felt the wood surfaces on some pieces had not been properly sanded. This particular finisher is highly regarded for his painstaking and conscientious workmanship, and his foreman backed him up when he insisted that the work be returned to the cabinet department for completion of the sanding.

It is not uncommon for experienced finishers to refuse to work on wood surfaces that show evidence of having been carelessly or poorly sanded. Regardless of how proficient the finisher is, his work cannot possibly be high class when the surfaces he finishes lack a satisfactory background. Some firms strive to economize on sandpaper, sanding labor, or sanding time, meanwhile offsetting all this gain by the poor appearance of their finished products as a result of inferior sanding. Do not buy cheap sandpaper! Good finishers advise the best. Do not insist upon workmen using the sandpaper until it is worn almost to shreds before discarding it.

In some plants inexperienced young men or boys are entrusted with the sanding of furniture and cabinet work in the white and even between finish coats. These young people, well-meaning as they may be, are sometimes entirely unfit to do proper sanding. Regardless of how many instructions are issued in reference to good sanding, such educative work will fall flat if it is not observed by all concerned in the shop. It is an excellent plan to give reasons why certain instructions are given, such as just why a certain sandpaper is preferred for the particular work at hand.

Often, because of inferior or poor sandpaper, the sanded surfaces have to be doctored up, entailing loss of time, extra effort, fretting, fuming, and fussing. Much might be said about this; but it is sufficient to be reminded that considerable extra expense is frequently involved doing over or undoing a poor sanding job.

What Sandpaper to Use Depends Upon Character of Work

Practical shop men have many perferences and theories as to what is good sandpaper, and just what kinds and grades to use. It all depends on the character of the work. Guess-work should never be permitted. The foreman

should insist upon the use of just the right sandpaper for each kind of work. Adequate provision should be made to have on hand a supply for immediate needs, so the sanding operator will not be required to fall back on a different grade of paper.

One large concern uses No. 3/0 and 4/0 garnet paper for sanding .... this being double-faced finishing paper for sanding between coats, both in varnished and lacquered work. In this particular plant the foreman allows the sanding operators some liberty as to the selection of their sandpaper. Generally their choice of available sandpaper depends upon the specific work at hand — or maybe it's a question of the kind of wood, the weather, or atmospheric conditions. The experienced and alert sander usually senses to a nicety exactly what paper he should use; then he works accordingly, without interference.

Moistening Back of Sandpaper; Uniformity of Sanding

Some men who sand surfaces between coats, moisten the reverse side of their sandpaper in order to overcome objectionable scratching. This wetting is guided by certain individual conditions.

Smoother, more uniform sanding is achieved by means of a snappy firm stroke of the hand, rather than by a slow-arm movement. There should be clean even sanding all over the surface. Otherwise, flaws are certain to stand out later. Uniformity in sanding is essential to prepare the way for uniformity in final finishing. So far as possible, this demands uniform technique on the part of the sanding operator. When the sanding is done one way on a certain portion of a straight surface, and differently, perhaps carelessly, over an adjoining area, uniformity will be impossible.

Some sander men have the habit of bending or folding their sandpaper over the edges and corners of their work, the sandpaper thus causing white edges and rubbed-down corners. Others drag the paper over the edges or corners. Inexperienced operators should be cautioned about this. It is advisable to sand one face of the work at a time, and the fingers should serve as a guide along the joining edge. In fact, the fingers play no small part, especially so when working on panels and corners near moldings.

Performance Records

One of the most successful sanding operators points to his ever-handy record book as a helpful aid to his accomplishments. Therein he jots down everything pertaining to his work. He records the specific kinds and grades of sandpaper he uses for certain kinds of work, performed under certain conditions; he registers the results, especially when he tries some new technique or sands an unfamiliar wood. He puts down the salient features of individual sandpapers, studies different abrasives and their efficiency, and he has a dependable record of the exact sandpapers in stock. He is an efficient competent sanding operator.

There are many pet preferences and favorites in regard to the correct type of sanding-block. A suitable one should be about 1½x 3x5-in., properly felted. This sanding block should allow sufficient flexibility for the work at

hand. Sanding by hand is generally the preferred procedure on undercoats. Crevices, moldings and other uneven surfaces can be more effectively sanded by hand, as this produces a cleaner, smoother job. The efficient sander man places much reliance on the "feel" through his fingers to sense what he is doing.

Finishing Case Goods

HERE is a typical schedule of operations on low-priced or medium-priced bedroom case goods, finished in walnut:

Upon arrival from the cabinet department the exposed wood surfaces are carefully and thoroughly dusted off with an air duster to clean them of all dust and to open the surface pores of the wood to permit proper filling.

The first operation is to spray an oil stain on all backs; then move the goods on to the next operator who is set up to spray stain on all gum wood and sap walnut veneer; also on light colored places and any defects that may be uneven in color. Next the cases are sent to the filling department where they are brushed with a combination filler and stain. After this filler stain has dried to a flat surface it is scuffed or rubbed across the grain to fill the pores and to produce a perfectly "leveled up" surface.

The filled cases are allowed to stand overnight for drying. Then they are sprayed with a brown lacquer shading stain on all uneven or light places, making each piece uniform in color. If any carvings or turnings are to be highlighted, this effect can be accomplished by steelwooling.

A coat of sanding sealer is next in order. This is sprayed on, of course, and allowed to dry for about half a day; then it is sanded to a smooth surface.

If there are any routed lines to take care of, now is the time to do it. Usually these routings are painted with a straw-colored lacquer enamel which is quickly but skillfully applied with a striping bulb and point designed especially for this purpose. The lines are filled and allowed to dry for two hours or more.

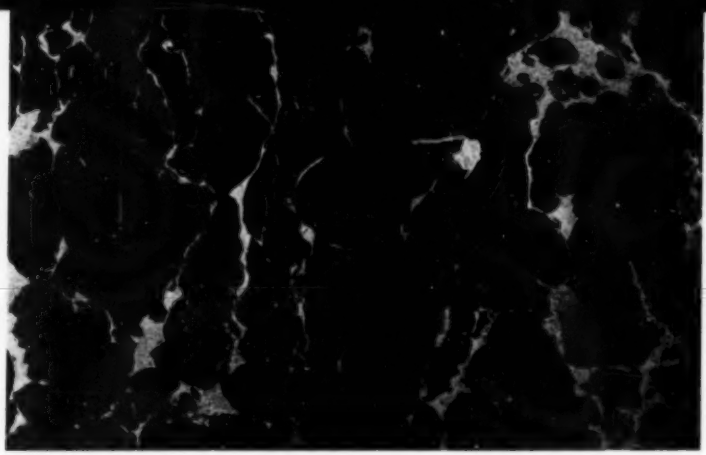
The intermediate and finishing coats will be lacquer or varnish—whichever the company elects to use. These coats are sprayed on.

The following day the pieces can be rubbed, using rubbing oil and pumice stone. All top and front surfaces, to show a real rubbed effect can first be rubbed with pumice and water to cut them down rapidly and effectively; then follow by rubbing these same surfaces with oil and pumice. Clean the surfaces after rubbing and polish them by using either a brown liquid wax or a clear wax made expressly for this purpose.—F. W. WORTH.

Why House Paints Peel

The home owner who sees the surface of his repainted house peeling off must look beyond the painter to find a target for his wrath. Painter and paint may have been excellent in themselves; the trouble, scientists say, lies in "incompatibility."

It all comes from the fact that coats of paint are applied one over the other in layers. Paint is a chemical composition, and different compositions have different actions. Thus coat No. 1 may be adequate in itself and last its allotted span of years. Then comes No. 2, of good quality also, yet its components may be chemicals which do not get along with those in No. 1. The result is blistering, peeling and other ills.—Du Pont Co.



Marbleizing by Dipping

BY WILLIAM VAHLE

NOVEL FINISHES come and go, but the age-old charm of varicolored marble has delighted us for centuries and still holds our admiration. There is dignity and a romantic aura attached to figured marble that few other natural decorative effects can match.

By the method about to be described, I have produced imitation marble effects that possess all the warmth and life, and all the elusive charm of the most beautiful originals obtainable. It is a very simple procedure and practically any workman, with a little experience and knowledge of mixing paints, can soon become quite proficient at this process.

Most any kind of marble design can be reproduced by this process. This method can be used on just about any kind of shape, flat or round; on any smooth or rough surface, large or small; and on practically any material, such as wood, metal, glass, or composition.

I have been using the "Method of Marbleizing by Dipping" in various shops for the past ten years. I never gave a thought to patenting the process for the reason that it would entail too great an expense for me to bear.

Tank for Floating Colors

To start with, a square or rectangular tank must be constructed, preferably of galvanized iron. About 22 to 24 gauge metal will be strong enough for any size tank up to 6 x 12-ft., and 18-in. deep. All joints should be interlocked and heavily soldered. Any tank larger than 4x4-ft. should be

in Floated Colors . . .

Illustrations above were made from photos of plywood panels dipped in floated colors.

set in a cradle of framework to support the sides and bottom. This support to the tank is quite essential.

The depth of the tank should not exceed 18-in. This is important, as the greater the depth, the more troublesome you will find it to dip a large flat object. This is due to the fact that, the greater the depth, the more water pressure and surface tension you will have to contend with.

A short apron of about 1-in. is left all around the top edge of the tank. This is to support the "surface cleaning board" — a board used for cleaning the surface of the water of any residue paint left by each previous dipping. This board should be of solid wood about 1-in. thick, 6-in. wide and 4-in. longer than the inside measurement of the tank. It is notched at each end 2¼x4-in. so it will fit into the tank as shown in Fig. 1. It must be made in such a way that you can move it back and forth. The board is always left in the tank, resting on the side or end opposite to where the workman stands. (Later on you shall see why this board is left in the tank and at one end.)

The tank must be of suitable size to accommodate the parts or objects to be dipped. For instance, if you are going to marbleize panels as large as 4-ft. wide and 6-ft. long, you must allow 2-ft. of clearance both in length and in width of the tank. Later, we shall see why this extra room is needed. The top edge of the tank should be approximately 36-in. above the floor level — a convenient height.

When you have your tank constructed and set in place, fill it with water to within 2-in. of the top. To every 25 gallons of water, add 1-lb. of borax — this to soften the water and make it easier to work with. Put your board in place at one end of the tank. About 2-in. of the lower edge of the board will dip into the water. This board, as I stated before, is

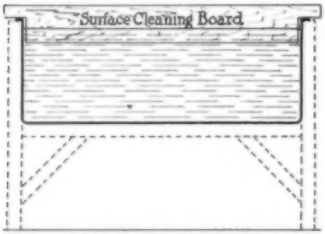


Fig. 1—Cross-section view of dip tank, 18-in. deep by 4-ft. square, supported by framing, so top edge is 3-ft. high. The surface cleaning board, its lower edge in water, is free to slide back and forth.

used for cleaning the surface of the water and for condensing the formation of the marble design.

Paint Materials and Veining Equipment

For your colors, obtain about 12 containers, either metal or glass. They should be about 3-in. in diameter and 5-in. deep, with screw-top covers like fruit jars. Construct a small rack that will hold five or six of these containers lengthwise. This will enable you to hold two or more containers in your hand at the same time, while you are forming your marble design in which two or more colors are used. The containers are capped when not in use, to keep the paint mixtures in a soluble state; the solvent evaporates quite rapidly when exposed to the air.

Now obtain a few dozen sticks about ¼-in. thick, 1-in. wide and 8-in. long. (The measurements need not be exact.) These sticks are used for mixing your colors and for transferring them to the water.

Included in your paint supplies you will need white dammar varnish, grade A-1 lacquer thinners, boiled oil, and various colors in japan. Do not purchase any substitutes of inferior quality, as they will only hinder you in obtaining the correct results by this method. Colors in japan should be obtained in cans instead of tubes, as they cost less in bulk and all excess liquid can be drawn off the top. You use only the color itself. Some of the colors that you will use are: u z a t o n a red, chrome green medium, rose pink, chrome yellow orange, burnt sienna, raw sienna, burnt umber, raw umber, van dyke brown, black and white.

Preparing the "Film Solution"; Mixing the Paints

Having obtained the necessary paint supplies you are now ready to mix your colors and "film solution". This solution is for creating a surface film which is necessary to hold the colors in place so they will not spread. This mixture is made up of one part white dammar varnish, two parts A-1 lacquer thinner, and ¼ to ½ part boiled oil. The amount of oil varies with the size of your tank. For instance, if your tank is 4x6-ft., ¼ part oil is sufficient, and double the amount for a tank twice that size.

This solution will dry in about five minutes, which is more than enough time for you to form your marble design and do the dipping.

The japan colors (those you will need for whichever particular type of marble you want to imitate) should be reduced with A-1 lacquer thinner to about the consistency of light cream.

The jars containing japan colors should be filled about two-thirds full in order to get enough japan color on the stick to complete each individual vein line. The stick is dipped into the japan color before each vein line is drawn.

A drop or two of boiled oil added to each ounce of japan color, after it has been reduced, will prevent it from breaking up and will make it just tacky enough to adhere to the object you are going to dip. If the marble you are reproducing calls for a wider vein line in the design, add a few more drops of boiled oil. By adding or substracting small amount of oil, you are able to control the width of the vein lines. Obtain a number of pieces of plywood ¼-in. thick and 12-in. square — or you can use metal panels of approximately the same size. Paint a few pieces black and a few white; these you can use for your first few experiments.

A Simple Marble Design

To imitate black and white marble—that is, white lines or veins in a black background — prepare your "film solution" and japan color in the manner I have already prescribed. Sprinkle the solution onto the water, using one of your mixing sticks, or by sprinkling it from a bottle capped with an aluminum cork. As little as 20 to 30 drops of this solution is enough to sprinkle in a tank of medium size.

Stand so that you face the long way of the tank. Hold in your left hand the container of white japan color you have prepared. With your right hand you dip in a stick and, starting from the left side, you will draw in the lines, parallel to the width. The lines should be placed about 6-in. apart. When you have covered the surface of the water with these lines, start at the far right-hand corner of the tank, and, by using a weaving motion, traverse the entire length of the tank from one end to the other, about 6-in. apart, till you come back to the side where you are standing. This tracing should not be done too rapidly, or you will blur the fine vein effects of the marble design.

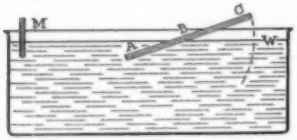
Now draw the cleaning board (which you have left on the opposite end of the tank) toward you. This will condense the formation of marble design.

The Technique of Dipping

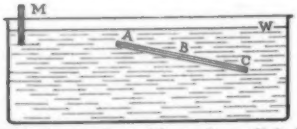
At this point, let me explain something about the correct technique of dipping an object into floating colors.

In dipping objects of various sizes and shapes, as for instance, panels, columns, wooden balls, oval surfaces, etc., the principal idea is to cover the entire surface on which the pattern or marble design must appear. To master the correct method of dipping these various shaped articles, I would advise a little experimentation by the beginner — before you are ready to go ahead with a real production job.

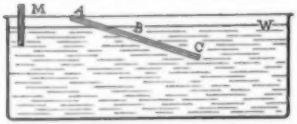
Having installed the tank and filled it with water, obtain a number of panels of various sizes, a wooden ball 2 or 3-in. in diameter and a wooden column 2 to 6-in. in diameter and 1 to 2-ft. in length.



Here's how you start the panel into the floating colors; Stand in front of tank (at the right above) and hold the panel at its mid-length (B). Tilt it as shown and start the end A into the water.



Hold the panel at this angle until it is completely under water; then change the tilt so that end C is lower than end A.



Now start end A out of the water, gently sliding it out with a lengthwise motion instead of lifting it straight upward.

These various objects need not be painted for your experimenting.

Take a panel, say 12-in. square, and dip it flush (flatwise) with the surface of the water. Now try to raise the panel. Notice the amount of pull or energy needed to raise this panel out of the water. This is due: 1) to the surface tension of the water, and 2) to the fact that between the panel and the surface of the water, there is no air space. When you attempt to lift the panel you cause a partial vacuum. *This is how not to dip a panel of this or any other size.*

The correct way to dip a panel is to hold it at a slight angle and let it gently come in contact with the surface of the water. Keep this angle until the entire panel is immersed 1 or 2-in. beneath the surface of the water. To remove panel from the water, reverse its angle of entrance (while still immersed) and slide it gently out of the water. By dipping the panel this way the problems encountered in how not to dip a panel will be answered.

Due to the slight angle at which the panel is removed from the water, the surface tension of the water has no area on the panel on which to exert its force or pull. The panel, coming out of the water at an angle, allows the surrounding air to come between the panel and the surface of the water, thereby eliminating the forming of a vacuum.

In dipping turnings, such as columns, wooden balls, etc., the idea is to collect the pattern or design floating on the surface of the water and transfer it to the surface of such circular objects.

In the event you have erred in the dipping process and wish to re-dip the object, the colors can be washed off with a cloth saturated with benzine; then dry the surface with a clean cloth. Leave the marbleized panel stand upright to dry. When thoroughly dry, apply a coat or two of clear lacquer or varnish. This will brighten and preserve the marble finish and make it durable.

(To be continued)

Book on Plasticizing Oils

The Neville Co. (coal-tar products), Pittsburgh, Pa., announce a new booklet "Neville Plasticizing Oils" (page size 6x9-in.), which includes technical information on Nevinol, No. 2 refined heavy oil, No. 1-D heavy oil, and P. H. O. Copies are available upon request.

One-Coat Finish on Chairs

BY R. JAY BURNS

Editor's Note: This article was prompted by the following inquiry from a manufacturer of folding chairs:

We manufacture low-priced lawn chairs made of air-dried beech, birch and maple, to which we apply one coat of outdoor low-priced varnish by dipping. We have had some difficulty in obtaining a satisfactory finish. We attribute this to the fact that the particular lot of varnish we used was different than the previous lot.

Can you recommend some laboratory that could analyze our varnish and advise us what the ingredients are, so we could have each lot of varnish we receive analyzed to be sure that it is the same as the previous lot?

When this laboratory analyzes our varnish, could they make up a formula or specifications from this so that we could submit these specifications or formula to several varnish suppliers, requesting them to quote on a varnish made in accordance with these specifications? If they did meet these specifications, could we be sure that it would work as well and give us the same finish as the original lot? We would like to know if this is a practical solution of our problem.

OUR APPROACH to this problem is to first examine the wood. Lumber is cut during different seasons of the year—some wet and some dry—therefore its moisture content is not at all uniform. The same variety of tree cut from high dry ground will usually differ from one cut from low wet ground. Since several varieties of lumber are used in this case, there is a further complication, as some woods naturally contain more moisture than others.

For high grade furniture, the lumber is dried in a kiln to a uniform moisture content of about 7%. Care is used in storing it so that this moisture content is maintained as nearly as possible. Even then, it may become too dry or take on additional moisture from the air before it reaches the finishing room. This is one of the problems that frequently confront wood finishers.

In this particular case the wood is not kiln dried. It is only air dried. Under this condition the moisture content is bound to vary so much that even with a perfectly uniform varnish, the results will vary considerably. Since price seems to be a considerable factor, kiln dried lumber may be out of the question. On the other hand, some sort of drying kiln might well pay for itself by per-

mitting the use of cheaper varnish.

Apparently no sealer is used on this work. Let us assume then that the best varnish made is used in one dip coat and that perfectly kiln dried lumber is used. On the very porous spots the varnish will sink in much more than elsewhere, making for a non-uniform finish. It seems then that with one coat of varnish on air dried wood, a uniform result is not possible.

Few independent laboratories are capable of making much of an analysis on varnish. Their chemists dabble into so many things that they are not sufficiently familiar with varnish formulas. Even if a varnish is submitted to the laboratory of a large varnish manufacturer, whose chemists work with nothing but varnish, it is impossible to determine exactly what the formula is. A fairly accurate list of ingredients can be made out but the quantity of each ingredient is hard to gauge. Even with the exact list and quantity of ingredients, there still remains the question of just how they were put together — and at what temperatures.

The present supplier of varnish had years of experience and the expense of costly laboratories to develop his varnish. His formula is his—one of the assets of his business. Would you rob him of one of his assets and give it to his competitor?

Submit Information on Requirements of Finish

If this supplier has failed to sell his customer on his ability to supply his need, then another varnish maker should be given the opportunity to meet this requirement. If there is some doubt regarding the quality of this varnish, why try to copy it? Would it not be better to ask several reputable varnish manufacturers to make an analysis of the requirements and submit their most likely materials? If there is no doubt regarding the quality of the present varnish, why shop around? Think, rather, of the other factors involved.

Varnish and kindred materials are sold, largely, on the reputation of their manufacturer. The users do not know much about them and must rely on the ability and honesty of the supplier.

If it is certain that the present varnish is properly made and that one batch is correct and another is off formula, then we would select specimens from a correct batch and submit them, with complete information regarding the entire manufacturing and finishing procedure, to several reputable varnish makers and ask each of these concerns to submit a material that will do the job. Since no attempt will be made to copy the formula, this is entirely an ethical thing to do. The competing manufacturers will use the specimens to determine physical properties only, such as solids, viscosity, drying time, etc. We would even tell them what price we are paying.

Unless one of these competing manufacturers can supply equal quality at a better price, or better quality at the same price, there is no reason to give them the business. By having price information and knowing whether they are limited to this price, they can more intelligently work on this problem.

Since there is probably the fac-

SCOTCH MASKING TAPES
(Pressure Sensitive—Seal Without Moistening)
Are Being Used By The Aircraft Industry
From Coast To Coast . . .

. . . on new construction and maintenance for all general masking and protective purposes. In addition, there are Scotch Tapes for edging abrasion shoes and de-icers, others for marking and identifying wires, fuel lines and other parts.

Scotch Tapes are also made for ALL TYPES OF INDUSTRIAL FINISHING in widths from ¼ inch to 26 inches with varying degrees of adhesion and strength of backings to meet specific industrial finishing needs.

Manufactured and Patented By

MINNESOTA MINING & MFG. CO.

SAINT PAUL Branches in Principal Cities MINNESOTA

The Desire To Serve The Ability To Produce

Under one or more of the following U. S. Patents: Nos. 1357080, 1779083, 1884965, 1914122, 1999910, 2009413, 1954805, Re. Nos. 18748, 19028.

Canadian Manufacturers and Distributors

CANADIAN DUREX ABRASIVES, LTD., TORONTO, CANADA

WRITE FOR YOUR SAMPLE ROLL TODAY

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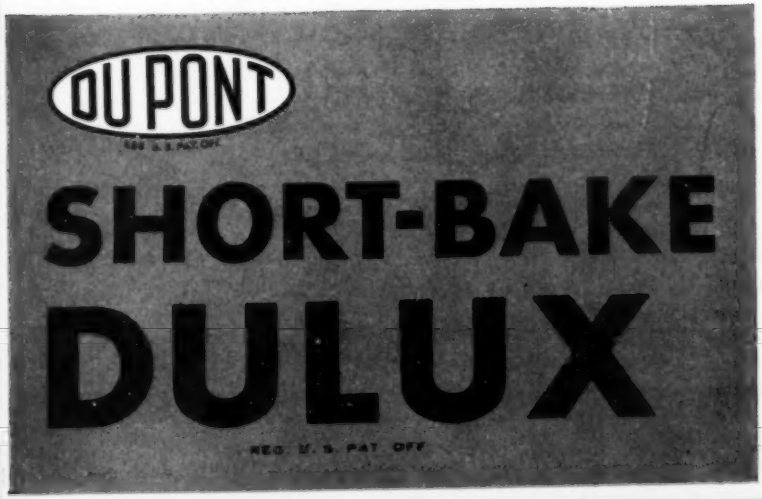
IT'S

NEW DUPONT SHO
SLASHES BAKING T



EASIER

SHORT-BAKE DULUX

REG. U. S. PAT. OFF.

IGTIME!

U PONT offers you a sensational new type of enamel that cuts bak- time to new lows!

It's Short-Bake DULUX . . . in white in colors.

The faster baking time of this bril- nt, durable enamel allows you a *greater* put with *smaller* ovens. Thus it offers a way to reduce your initial invest- nt on equipment.

In addition, Short-Bake DULUX gives hly satisfactory results with only coat, instead of the usual two coats en orthodox enamels or lacquers are d. Short-Bake DULUX therefore cuts king time . . . eliminates one com- te operation . . . and saves on ma- ials used.

You can apply Short-Bake DULUX direct to solvent cleaned steel, bonderited steel or primed steel surfaces . . . on practically any metal object that won't be subjected to constant exposure to weather or extreme moisture.

Short-Bake DULUX has extreme adhesion, gloss, flexibility, hardness . . . and high resistance to soap, grease and alkali.

* * *

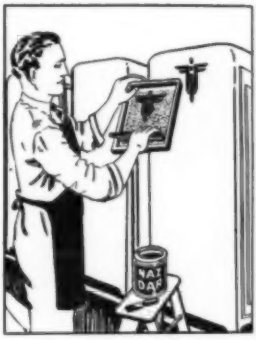
For full information about this faster-to-bake, money-saving enamel, just write to E. I. du Pont de Nemours & Co., Inc., Finishes Division, Wilmington, Delaware. Canada: Canadian Industries, Ltd., Toronto. Great Britain: Nobel Chemical Laboratories, London.

MODERN FINISHING *Requires* NAZ-DAR SCREEN PROCESS METHOD *of Decoration*

NAZ-DAR Screen Plates give you

SPEED
LOW COST
UNIFORMITY

in the application of decorative designs, lettering or trade marks on any flat surface.



NAZ-DAR Screen Plates have been used successively for many years in the decorating of metal and wood furniture, toys, novelties, games, radio dials, instrument panels, appliances and machinery.

NAZ-DAR Photographic Screen Plates or Hand Cut Stencils are made from your drawings, photographs or sketches. Sharpness and clearness guaranteed. Five thousand to ten thousand impressions are possible from each screen.

WRITE FOR COMPLETE DETAILS.

NAZ-DAR Process Paints and Equipment have been the standard for seventeen years. Every process need supplied through NAZ-DAR.

NAZ-DAR COMPANY

4014-22 NORTH ROCKWELL STREET CHICAGO, U. S. A.

Manufacturers of Silk Screen Process Paste Paints, Equipment and Supplies

tor of non-uniform wood and no sealer, it may be well to use a better varnish. By using higher quality ingredients the varnish manufacturer will be better able to maintain uniformity in his product. In order to get a low cost it is usually necessary to use cheap ingredients, and usually they are not uniform.

When we speak of uniformity of varnish ingredients, we are reminded of synthetic resins. In the older types of varnish, natural resins are used. Varnish manufacturers must vary their processes to compensate for these irregularities in the natural resin. Resins made synthetically are given whatever characteristic is required, and it is fairly easy to maintain uniformity. Some interesting one-coat finishes are being made with synthetic resins.

When we think of varnish prices we must also think of the covering capacity. A higher priced varnish will often go so much farther than a cheaper one that it actually gives a lower unit cost—and usually a better finish is obtained.

No business can stand still. No manufacturer can do things as he did them yesterday. Without constant improvement a business may continue on its own momentum for a few years, but the end is sure, inevitable.

Companies that considered themselves well entrenched have gone out of existence because they failed to sense the new trends in their industries. Almost all manufacturers in the chemical industries now recognize that their progress and their ability to compete depend to a large extent on chemical research. This recognition has become more widespread as the use of research has resulted in an ever-increasing number of new and revolutionary developments.—Interchemical Corp.

Sanding Aircraft Fabric Wings

AN ACTUAL instance relating to the use of a portable reciprocating-type power sander (small enough to hold in one hand) on aircraft wings, contains some interesting information about coating and sanding stretched fabric surfaces.

Several tests were made in June of this year on the wing sections of the Navy bombers manufactured in the plant of the Consolidated Aircraft Corp., San Diego, Calif.

The rear sections of the wings on these particular ships have a fabric cover over a metal rib. These sections are approximately 8x20-ft., and are constructed in such a manner that on top of each rib, after the fabric and pinked tape are in position, the rivets project above the surface of the wing. In the sanding operation, care must be taken to avoid touching the fabric and pinked tape on top of these rivets.

In finishing these sections, the airplane cloth is first stretched over the rivets. It is then doped and aluminum paint is applied. The sanding operation consists of sanding down this aluminum-painted surface, after which the entire section is lacquered.

When the portable sander was first tried, there were noticeable streaks left parallel to the ribs. This was caused by the sandpaper on the edge of the sander digging into the fabric and was due

to the weight of the machine and the pressure that was necessary to exert to cut this paint. Similar streaks resulted from hand sanding, which was the method previously employed. In order to do the work without leaving these streaks, the operator was instructed to wave the machine back and forth between the two ribs, pushing it forward at the same time as far as it would reach. This left absolutely no streaks and it was not necessary to go over the work a second time.

The abrasive paper used was No. 360 open-coat. An entire section was done by one of the men in 18 minutes without replacing the abrasive. This man had never previously handled one of these portable sanders.

It is important that no trace of oil show up on the work, since lacquer will not adhere to an oiled or greased surface. This sanding must be done dry. There is a tendency for the material that is being removed to clog or fill in the abrasive paper. To eliminate this, the company installed a tee in the air line between the pressure regulator and the automatic lubricator, and laid a small line from that tee to the water connection on the sander. In this way, a constant flow of air was played on the surface being sanded, and this blew away the material being removed. It also prevented the powder-like material from being worked into the fabric.

The sander block used was faced with a ½-in. felt pad on which the ends are chamfered. This permitted the operator to work closely to the edges and into the contours.

This portable single-block sander is also being used successfully in various sanding operations on wood templates and wood-forming dies, as well as on the plaster molds used for molding the lead dies. The lead dies themselves can be successfully sanded and cleaned up with the machine.—W. B. WILSON, Engineer.

Finishing Maple

ONE OF the many different ways to finish maple furniture in a uniform color is as follows:

Before the assembled furniture leaves the cabinet room it is sponged with a thin glue size, allowed to dry, and then carefully sanded—by belt sander or portable power sander where possible.

In the staining room we have a man inspect the wood for dark streaks, and then we apply a bleaching compound to bleach them out. After the bleached surfaces are dry we apply a coat of water stain solution. In addition to certain other ingredients, this stain solution contains ammonia and shellac. The ammonia acts as the emulsifier and keeps the stain in perfect solution. The shellac acts as a binder.

This type of stain accomplishes two things in one application. It stains and wash coats the surfaces at the same time. After the stain is dry the surfaces are thoroughly s a n d e d to make them smooth, using No. 6/0 sandpaper that has been used previously on some of the top coats, so that it is not quite so sharp and not so likely to cut through the stain.

The next step is to apply a coat of lacquer sealer. We let this dry for 1½ hours; then we sand it

The Sleek Figure

of the fair damsel transforms the barren sands into a spot of beauty, and the beach becomes the center of interested attention when before it most likely would not have rated more than a passing glance.

As the added touch of beauty transforms the commonplace sand into the attractive beach, so does a sparkling finish convert an "also ran" commercial product into an attention-compelling sales winner. Our creative studio has been helpful to many manufacturers in solving finishing problems for products in wood, plastics and metal.

We would like to be of service to you. There is no charge to reputable firms for this service. Write us about your finishing problems.

ROCKFORD VARNISH COMPANY

Manufacturers of Finishing Materials

ROCKFORD, ILLINOIS

down smooth. Next we spray on a coat of maple wiping glaze. We use a japan stain and add a small portion of linseed oil to the stain so that it will wipe easily and blend out readily. After this stain dries for about four hours, the surfaces are ready for the flat lacquer. When the lacquer is dry, we oil rub the tops and all of the cases.

We use No. 6/0 sandpaper to sand the fronts and ends, using plenty of oil on the sandpaper to prevent any scratches such as would be made with dry sandpaper. We wipe off this oil, making the surface dry and clean; then we apply a coat of nut brown lacquer wax. When the wax dries we polish it with soft rags.

One of the many reasons why I use water stain is that maple fades so easily when not stained with a fast-to-light stain. I have found that this method of finishing maple furniture is practical and economical.—R. E. CASEY.

Metal Finishing Consultant

Adolph Bregman, metallurgical engineer, and formerly managing editor of Metal Industry, has severed his connection with that journal and established an office at 123 William St., New York, N. Y., as a consultant in the metal products manufacturing and metal finishing industries. He will specialize on industrial problems, development of products and industrial markets, a field in which he has been engaged for a number of years. He has been Executive Secretary of the Masters' Electro-Plating Association of New York since 1934 and will retain that position.

Stencil Cutter's Catalog

A 16-page catalog showing illustrations, specifications and prices on a high quality line of stencil cutter's tools and supplies has been published by the Moore Air Brush Co., 4609 Grace St., Chicago, Ill.

Fuller Is New Technical Director at Marietta Paint & Color Co.

Mr. G. A. LaVallee, President of the Marietta Paint & Color Co., Marietta, Ohio, announces the appointment of Wayne R. Fuller as Technical Director of the company in charge of laboratories and research for both industrial and trade sales divisions. He succeeds Hamilton A. Derr who has been advanced and now takes charge of industrial product engineering in the field.

Mr. Fuller has a long and enviable record in the industry. Of his 17 years with Pratt & Lambert, five were spent as an industrial sales executive and 12 as Technical Director. He resigned from Pratt & Lambert to become manager of Industrial Research for Devoe & Raynolds, the position he held immediately preceding his connection with the Marietta organization.

Advanced by Mixing Equipment Co.

Mr. C. S. Quillen, Ch. E., has been placed in charge of field engineering in New York City and Central Southern territories for the Mixing equipment Co., Rochester, N. Y. During the past several months he has been assisting with development work at the Rochester plant. A graduate of Drexel Institute, Mr. Quillen was formerly with Alco Products, and Carbide & Carbon Chemical Corp. Mr. Quillen will maintain headquarters at 377 Broadway, the New York office of Mixing Equipment Co.

Star Chemical Co. Moves

The Star Chemical Co. of Chicago, Ill., announce their new address as 2533 S. Crawford Ave., former location having been 2211 S. St. Louis Ave.

Eclipse Spray Catalog

Catalog No. 66, just compiled and published by the Eclipse Airbrush Co., Inc., Newark, N. J., consists of 32 8½x11-in. coated paper pages containing illustrations and descriptions of the company's line of spray equipment including portable spray outfits, automatic spraying machines and all incidental accessories. The book is bound in heavy tinted paper covers which are attractively printed in two colors.

EGYPTIAN
Industrial
FINISHES

For many years, over sixty in fact, The Egyptian Lacquer Manufacturing Company has specialized in making quality lacquers and lacquer enamels . . . Ever alert to the changing conditions and demands in the field of industrial finishing, we have gradually added other finishing materials to our original line of lacquer products until today we are prepared to furnish practically every type of industrial finish . . . Synthetics for spray, dip, and brush application, oil base finishes, maintenance finishes, varnishes, and a host of other products go to make up the EGYPTIAN line.

We will welcome inquiries from manufacturers interested in the latest developments in industrial finishes of all types.

The Egyptian Lacquer Mfg. Co.

Rockefeller Center

New York, N. Y.

EGYPTIAN
FINISHES

Porcenite Finish

A one-coat bake finishing material that looks, feels and wears like porcelain is a new development of the Advance Paint Co., Indianapolis, Ind. Being resistant to water, soaps and other alkalies, it is a finish particularly well adapted for use on various household appliances including washing machines, ranges, refrigerators, etc. The white Porcenite has remarkable resistance to yellowing. Baking temperatures will vary according to the time allowed in the oven. For light gauge metal the suggested schedule is 250°F. for one hour or 300°F. for 45 minutes. The finish is hard when it leaves the oven. A one-coat finish of Porcenite over metal has the appearance of an ordinary two-coat finish job. It is available in white, black and colors.

Striping Tool

Clean-cut stripes of uniform thickness and width can be quickly and easily made in straight or curved lines with the new striping tool offered by the DeVilbiss Co., Toledo, Ohio. The tool is designed for decorative striping on various finished and refinished products. The workman holds it like a fountain pen and draws it across the surface to be striped. It works equally well with paint, lacquer or synthetic enamel. Single, double or triple lines can be laid side by side at any desired spacing by simple adjustment of guides.

Simple to operate; easy to clean.

The liquid material is uniformly supplied from the paint chamber to the striping wheel by a gear pump in the head of the tool. This pump operates at a speed commensurate to the action of the wheel. This striping tool is furnished with three interchangeable heads for 1/64, 1/32 and 5/64-in. width. An extra head for broad ⅛-in. striping is available.

New...

MATERIALS
SUPPLIES
EQUIPMENT

Waterproofing Chemicals

Entry of the methacrylate esters into a wide variety of uses was recently described by three du Pont Co. chemists who have played an important part in the development, D. E. Strain, R. G. Kennelly and H. R. Dittmar.

The several esters, all of them water-clear thermoplastic resins, were noted as having found commercial application as impregnants for wood, cloth, paper, electrical apparatus, metals and stone. Materials treated in this way are more resistant to water, oils and chemicals. Wood, for example, is stronger and more resistant to water absorption, warpage and the action of chemicals when thus impregnated.

The methacrylate resins possess excellent film-forming and adhesive

Rx for a Good Lacquer Finish

A prescription for a good Lacquer Finish includes all of the finishing materials from the wood up.

In order to secure an attractive finish from the sales standpoint, the materials must have proper eye appeal. This involves color, texture and all around good appearance. In order that this finish may remain attractive in the store and in the home, top coats especially must have lasting durability.

You can be sure of a good looking finish that has lasting durability by standardizing on Day materials.

Day stains, fillers and undercoats are developed to have extra sales appeal. The finishes which sell best at the markets are available here, usually a little ahead of the crowd. Day sealers and lacquers are pre-tested to insure long life, together with economy in first coat and in application.

Mention your requirements for a prescription that will add life to your line. Write today.

JAMES B. DAY & CO.

• CHICAGO •

properties and because of their wide compatibility with solvents, plasticizers and resinous materials readily enter into more complex formulations.

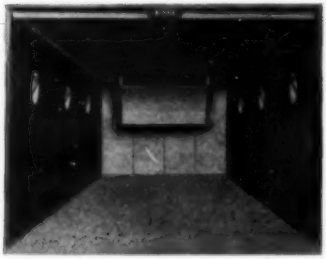
Emulsions of wax-methacrylate compositions can be prepared readily, enabling coating to be carried out by spraying, brushing or dipping at normal temperatures. Films flowed from emulsions are characterized by the same toughness and flexibility as films deposited from melt.

Victorian Mahogany

A new development announced by V. J. Dolan & Co., 1830 N. Laramie Ave., Chicago, Ill., is called Victorian Mahogany—a beautiful rich warm reddish brown mahogany stain for use on gum, birch and maple. This new stain represents an unusual combination of anilines and pigments perfectly blended in special solvents. The method of application as well as the product itself is new and different.

Truck Spray Booths

Sectional spray booths large enough to accommodate the bodies of freight trucks and trailers are offered by Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill. Designed for the greatest possible flexibility of application, the user may purchase only a top and one side, or a top and two sides, or a top, back and one side, and thus utilize his own walls as part of the spray booth. All Binks automotive spray booths are constructed of 22-gage sheet steel sectional panels, reinforced with angle steel framing, spot welded. Top, back, right or left side exhaust can be furnished.



For trucks, trailers and buses.

Protective Respirator

A new, rubber constructed respirator has just been perfected to protect the lungs of those who must work where injurious gases and fumes prevail. It is a twin-filter type respirator equipped with twin cartridges of special charcoal for organic vapors, soda lime for acid gases, and silica gel for ammonia gas.

Easy to wear; safe to use.

Cartridges are easily removable and quickly replaced by new ones. Air filter apertures have been placed back at cheek location for perfect distribution of its exceptionally light weight. Exhalation valve has been located close to mouth for positive elimination of breathed air.

Face piece is of soft rubber that makes an air-tight fit. A face cloth

WRINKLE FINISHES

Stanley 70F-1 Fine Black and Stanley 70F-2 Coarse Black Wrinkle Enamels have been produced to meet an increasing demand for a high-quality type of wrinkle finish. With these materials better gloss and color are obtained.

To insure uniform results they are shipped ready for use and are for spray application as received. The coatings should be baked for two hours at 250°F. An unusual characteristic of these materials in contrast to most wrinkle finishes is that they may be allowed to air dry a variable length of time before baking without in any way affecting the final appearance or character of the wrinkle.

An extremely attractive and economical single coat finish of good hardness and adhesion is produced with Stanley Wrinkle Finishes.

(Licensed by New Wrinkle, Inc.)

STANLEY

THE STANLEY CHEMICAL CO.

EAST BERLIN, CONN.

LACQUERS - SYNTHETICS - ENAMELS - JAPANS

A Subsidiary of THE STANLEY WORKS, NEW BRITAIN, CONN.

is provided both for comfort and as a safeguard against dermititus. The trade name is Dupor No. 10, made by H. S. Cover, South Bend, Ind.

Metal "Wash" Nozzles

The new Fulljet nozzle announced by Spraying Systems Co., 4922 W. Grand Ave., Chicago, Ill., delivers a penetrating rain-like full-cone spray

Available in different sizes; different metals.

with uniform distribution — suitable for metal cleaning, rinsing and various industrial washing.

Standard nozzles are made of brass, but can be had in any other metal required to meet chemical and corrosion conditions. They are available with removable internal vanes in female pipe connection from ⅛ to 3-in. . . . ¼ to ½-in. are made with removable cap. Capacities range from .5 to 120-g.p.m. at 10-lbs. pressure.

Vitra-Carlite

Hilo Varnish Corporation, 44 Stewart Ave., Brooklyn, N. Y., announces the release of a new porcelain-like, short-bake, synthetic enamel, known as Vitra-Carlite. It covers excellently in one coat, laying on with a full smooth film. May be used for brush, spray, dip or tumble. Also excellent hardness and marproofness. Has chemical resistance, especially to solvents, oils, greases, etc.

Chemical Respirator

A new low-resistance chemical-cartridge respirator, especially designed for paint spray operators, is

Available in 190 or 100-cc. content.

announced by Willson Products, Inc., 312 Thorn St., Reading, Pa. The new respirator has two inexpensive replaceable cartridges which afford very low breathing resistance but provide an unusually high degree of protection.

The new form-fitting rubber face piece conforms to the face and permits extensive visibility. Spectacles or goggles may be worn comfortably. Three separate chemical fills are available, depending upon the use to which the respirator is to be put.

New Resin Adhesive

A new phenolic resin adhesive is announced by General Plastics, Inc., North Tonawanda, N. Y., known as their 5116 Resin Adhesive. It is stated that this material, in solution in a hydrocarbon solvent, has exceptionally high bonding strength. It is particularly efficient in bonding asbestos to sheet steel; rubber to metal or cellulose acetate materials; plastic molded parts; porcelain enameled parts; cellophane or treated papers to steel, copper wire or wood.

3 New Sales Appealing Finishes That Will Save You Money! . . . . .

1. VITRA CARLITE A short-bake, 100% Synthetic Enamel that gives a beautiful, glossy, porcelain-like in appearance film in one coat. The short bake at 300° F. for 20 minutes allows for *quick production — greater output*. Has excellent adhesion, hardness, flexibility, marproofness, durability, high resistance to solvents, oils, greases, etc. Ideally suited for metal objects and appliances.

2. SPARKLE RIP-PL A brilliant, sparkling finish can be given your products with Hilo Gold and Aluminum *Sparkle* Rip-pl (Baking). Novelty Finishes — they are coming into greater and greater use. Covers surface imperfections splendidly in one coat — no primer needed on non-porous surfaces. Proof against alcohol, grease, moisture and oil.

3. TRANS-LUX A highly pigmented, metallic colored, *flexible,* lacquer that gives unusual hiding in one coat— most lacquers of this type requiring two coats. Air dries overnight. Can be baked to handle in 10 minutes at 100° F. Its semi-lustrous finish needs no rubbing or polishing, nor any clear lacquer protective coating. Ideal for auto accessories, household articles, novelties, switchplates, etc.

Complete information and samples furnished upon request.

HILO VARNISH CORP.
42-60 STEWART AVE., BROOKLYN, N. Y.
Boston Chicago

HILO

Unaffected by water, moderate heat, alkalies and mild acids. Used as a coating, it withstands a 50% caustic soda solution indefinitely. Retains its bonding strength up to 212°F. It is anticipated its greatest value will be to manufacturers where cost is secondary to a satisfactory solution of their bonding problems.

Material Strainer for Spray Guns

Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill., announces a No. 255 Material Strainer, which fits on the

Strains material at gun.

material inlet of its standard production spray guns for straining the paint which is being delivered to the material inlet of the gun.

This type of strainer is the last cleaning agent to remove any foreign matter which might have been picked up in the hose or the circulating pipe lines. The No. 255 strainer has a 250 mesh screen, which can be easily removed for cleaning.

Centrifugal Electric Painting Machine

A newly improved electric painting machine that spreads paint by centrifugal force, in an even fan-shaped stream and without spattering or

The machine weighs only 5½-lbs.

fogging, is announced by Jas. H. Matthews & Co., 3942 Forbes St., Pittsburgh, Pa. The paint outlet can be adjusted to widths of from less than 1-in. up to 18-in. It is a compact self-contained unit . . . . includes a 1/10-hp. motor, a gun and a 3-pint paint can . . . . and plugs into any 110-volt AC or DC outlet.

According to the manufacturer this machine has proved to be five times faster than a brush. It enables any painter to cover 1500-sq.ft. of finished surface per hour.

Chemical Cartridge Respirators

Efficient and comfortable protection against harmful gases and vapors given off by the liquid vehicle of paint during paint spraying operations, as well as light concentrations of organic and acid gases occurring singly or in combinations, is provided by the well known M. S. A. chemical-cartridge respirators.

M. S. A. chemical-cartridge respirators are available in two styles —the Comfo and U. S. Navy half-mask types. Facepieces of both are

WOOD LACQUERS

There are no spectacular developments in wood lacquers. There is, however, the accumulation of years of testing and steady improvement resulting in our present line of gloss and flat lacquers developed for the wood working industries.

Where the maximum dollar value in solids and smooth-flowing solvents is required; where perfected resistance to cold-checking, abrasion, moisture, printing, beverages and light are desired, we shall be more than glad to submit samples for any desired test.

Within the comparatively narrow price range for this type of lacquer, we feel we can and do supply a material unsurpassed for its specific purpose.

THE VARNISH PRODUCTS CO.

5208 Harvard Avenue Cleveland, Ohio

CHECK THESE TAPES—TO HELP SOLVE YOUR INDUSTRIAL ADHESIVE TAPE PROBLEM

PERMACEL
THE PAPER MASKING TAPE

INDUSTRIAL
COARSE CLOTH MASKING TAPE

JONFLEX
FINE CLOTH MASKING TAPE

Samples on Request

UTILITAPE
WATERPROOF
CLOTH ALL-PURPOSE TAPE

All Tapes in ¼" to 36" wide in 60-yard rolls

INDUSTRIAL TAPE CORPORATION
NEW BRUNSWICK, N. J.

all-rubber, easy to adjust and fit with a gas-tight seal.

An informative and well illustrated new bulletin, just off the press, describes the respirators in detail. Copies are available by addressing the Mine Safety Appliance Co., Braddock, Thomas & Meade Sts., Pittsburgh, Pa.

Velunite Metallic Baking Enamel

A new metallic baking enamel of a synthetic type, suitable for either interior or exterior use, is announced by the Acme White Lead and Color Works, 8250 St. Aubin Ave., Detroit, Mich. It can be applied and handled in practically the same manner as the ordinary type of synthetic enamel. In sunlight this finish shows an exceptionally rich metalescent effect, particularly in the blues and browns. It is available in various tints of such colors as browns, taupes, grays, blues and greens. This new enamel is designed to bake at 250°F. for one hour. It may be applied to bare metal, but presents a better appearance when applied over a primed surface.

Roxaprene Durability-Flexibility Finishes

A new line of finishing materials suitable for metal and wood, baking or air-drying, are remarkable for their excellent adhesion, durability and flexibility. They have been named "Roxaprene" by the manufacturer, Roxalin Flexible Lacquer Co., Inc., Elizabeth, N. J.

These finishes can be applied by spraying, dipping or roller-coating. They set up as quickly as lacquer at room temperature, after which the coating can be allowed to air dry or it can be force-dried or baked. Air-dry coatings are dry enough to tape after six hours. Typical baking schedules are: 180°F. for one hour; 250°F. for ½ hour, etc.

The completely dry coating has an excellent gloss and is resistant to gasoline, oil, fruit acids, vegetable oils, soap, perspiration, salt spray, humidity and other factors in film failures.

Blanchit
(Reg. U. S. Pat. Off.)
For the most effective, easiest to apply and safest
WOOD BLEACH
Perfect results on new wood and refinish work.
L. R. Van Allen & Co.
CHICAGO, ILL.

No. 711 METAL PRIMER Air Drying
—as an undercoat for either Lacquer or Synthetic Enamels.
Inquiries from interested manufacturers of metal products, invited.
H. V. WALKER CO., Elizabeth, N. J.
"FINISHES TO FIT THE PRODUCT"
New England Warehouse, Brown & Dean Co., Providence, R. I.

Kindly mention INDUSTRIAL FINISHING when writing advertisers

Roxaprene coatings can be applied to unsized flat tin or aluminum sheets by a roller coating machine, baked to a tack-free finish, and then blanked, drawn and often knurled to make fancy metal caps for liquor bottles and other packages. So permanent is the adhesion that films more than two years old may be bent double without cracking. These finishes are also resistant to chemical and alkali solutions.

Letters from I. F. Readers

(Continued from page 8)

is available, and also the names of manufacturers who are supplying this type of equipment.—U. A. Mfg. Co. (Radio Apparatus).

The article appeared in Sept. 1936 issue.—ED.

Wash Wiping Rags

I would like some information from the company who sells the Utex Washer and Duo Tumbler for washing wiping rags. Their addresses are not given in INDUSTRIAL FINISHING. —F. M.

Finishing Turnstiles

We make turnstiles, the bases of which are cast iron with revolving tops made of gas pipe with cast iron hubs, and desire an air-drying enamel that can be applied at low cost; also undercoat for same if necessary. The enamel must be in color, preferably light green, and have long wearing qualities.—A. N. Specialties (Dyes, Stampings, etc.).

Salesmen's Cards

An article in August issue by J. Ray Burns on the subject: "Some Buyers I Have Met," (beginning on page 29) has intrigued us, because it brings up a subject that seems important to any one buying — or selling a varied line of items.

When salesmen call on us at Sparkhill we find a variety of business cards. They differ in size, proportion, thickness and weight. Most of them, however, are of such lim-

LILLY
INDUSTRIAL
FINISHES

Dependable

in laboratory and manufacturing cooperation . . from an experienced organization of practical and technical men . . working in a modern plant . . with the latest laboratory and production equipment. With such a background, you would naturally expect Lilly service and Lilly products to be dependable—*always*.

Great Britain and Europe: Apply Jenson & Nicholson Laboratories, Stratford, London, England.

LILLY
VARNISH COMPANY
666 So. California St., Indianapolis, Ind.
Branches: Chicago, Ill.; Grand Rapids, Mich.; Gardner, Mass.
The LILLY CO., High Point, N. C.

With the Right Finish
FILLERS
STAINS
ENAMELS
LACQUERS
VARNISHES
You'll Finish Right

ATTENTION

METAL FINISHERS

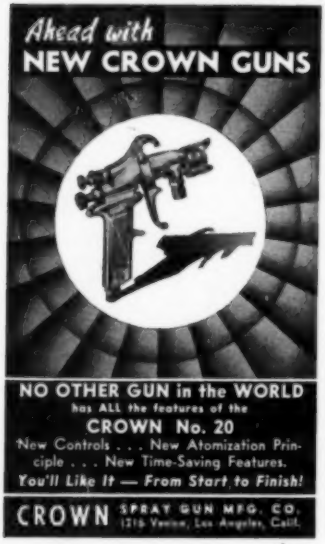
A high gloss synthetic metallic finish in one coat that produces an excellent two coat appearance.

Available in Most Bronze Shades

Write Today for Sample

The Mitchell-Mayer Co.

ST. LOUIS, MO.


Ahead with
NEW CROWN GUNS
NO OTHER GUN in the WORLD
has ALL the features of the
CROWN No. 20
New Controls . . . New Atomization Principle . . . New Time-Saving Features.
You'll Like It — From Start to Finish!
CROWN SPRAY GUN MFG. CO.
1216 Venice, Los Angeles, Calif.

ited area, nothing but the merest data is possible.

We speak for ourselves, as well as for the average business man. What is he supposed to do with such a piece of stationery? If placed in a drawer it is lost. If stuck under the desk blotter, it is later cleaned out. If handed to the stenographer, she may pin it onto a letterhead and file it. But in the majority of cases it is thrown by the purchasing agent into the wastepaper basket.

We use and advise a standard 3x5 card. It is tabbed at the top with the firm's name and class of business. These fit the standard 3x5 office filing drawers, so reference can be made to them at any time. This is a logical and proper place for them, should one want to identify a special salesman or his merchandise. In fact, when we receive a different size card, we paste it on the standard 3x5 filing memoranda, having our own classification tabs for each specific business.

Many salesmen probably prefer a small individual card for their personal convenience. But that would not prohibit their carrying a stock size (3x5) and regulation form to be be used for the permanent record. It is to the firm's and the salesman's advantage to supply this convenient business record.

Someone has said: "The average letter file is either a Morgue or a Gold Mine." We don't want to murder any salesman, but we do like to place their names in a cemetery; at least where their resting place and memory are "marked"!—The Sparhawk Co., Sparkill, N. Y.

Sound Deadener

On page 54 of your August issue you present an inquiry from the N. Mfg. Co. who would like to know the names of manufacturers producing insulation similar to that used in automobile bodies. We would be glad to have the name of this inquirer if this request is in order.—The Upson Co.

Bleaching Compound

We have been trying to obtain a bleaching compound that could be used for making blond maples, blond mahoganies, Swedish Moderns, etc., Although we have obtained several different compounds, we have not found one that is entirely satisfactory. The only ones that have been anywhere near satisfactory contain a strong chemical and are dangerous to handle. We are wondering if you have any formula, or could recom-

mend any manufacturer that could furnish these materials and instructions as to how they could be used? —O. & F. Co.

Several concerns are prepared to supply satisfactory bleaching compounds.—ED.

Paint Like Chromium

Please let us have all available information and address of the concern selling "Paint Like Chromium" and paint resembling satin finish cadmium plate. This was mentioned in the February 1938 issue of INDUSTRIAL FINISHING. — F. E. Mfg. Co. (Electrical Appliances).

This and numerous other inquiries for the same product have been referred to the manufacturers.—ED.

Stain Remover

Can you give me any information of a firm that makes what is known as a stain remover to take stain out of the wood after the varnish has been removed? I understand there is a firm in Chicago that makes it.—Foreman Finisher.

Foreman Finisher has been given the names and addresses of several A-1 concerns that make and sell stain remover.—ED.

Will Supply Celluloid

In INDUSTRIAL FINISHING for August 1938, page 8, we note an inquiry for white celluloid. We are manufacturers of celluloid for all purposes, including piano keys, and will be glad to have you refer T. C. H. to us.—Celluloid Corp.

Solvent Recovery

Kindly refer to page 60 of your August 1938 issue of INDUSTRIAL FINISHING relative to the subject, "Recover and Re-use Solvents." Will you be so kind as to tell us the names of concerns who are in position to offer solvent recover services on accumulated dirty solvents in lots of 100 gallons and up?—T. U. Co. (Finishes).

It's Solvents Recovery Service, Inc., Lister Ave. & Brown St., Newark, N. J., as advertised in August issue, page 54.—ED.

CHRISTMAS
IS NOT
FAR AWAY

Give Santa Claus a realistic Red Cloth Coat and Cap this year by using Bright Red CLAREMONT FLOCKS.

Put some natural looking trim on his outfit with Bleached White CLAREMONT FLOCKS.

For attention compelling showcards—simple as well as elaborate Winter and Holiday scenes for display backgrounds and various signs of distinctive character, use CLAREMONT FLOCKS. They're easy and economical to use.

Available in a full range of brilliant colors in Cotton, Wool or Rayon. It's not a bit too early to order Flocks for your holiday work now—but insist on using GENUINE

CLAREMONT FLOCKS

Cotton - Wool - Rayon

FOR BEST RESLTS

CLAREMONT
WASTE MFG. CO.
CLAREMONT, N. H.

The country's leading manufacturers

For Impregnating Wood

Are you familiar with any process for impregnating sugar pine, mahogany or other woods with a material that will give suitable weather resistance — sufficient to keep long lengths of wood inert and straight for outdoor use?—L. S. Works.

Readers of I. F., can you answer this?—ED.

Parkerizing Process

We understand that in your August issue, on page 40, the Parker Research Laboratories announced their new process. We would appreciate if you would send us copy of this publication at your earliest convenience. — B. & C. Co. (Steel Windows & Doors).

Buffing Waxed Trim

Will you please furnish me with the name of a manufacturer of a small practical buffing machine, suitable for use in finishing quartered oak trim and floors that have been waxed?—P. J. C.

Fluorescent Paints

Kindly send us the names of manufacturers of fluorescent paints.—B. B. Co.

The names of several concerns have been submitted in reply to this.—ED.

Photo-Stencil Process of Graining

We have read with great interest Mr. H. L. Hiett's article on the Photo-Stencil Process of Reproducing Wood Grain (July issue, pages 23-27) and are pleased to note that he mentions that there are specialized firms offering ready-made photo-stencils.

We would like to contact one of these firms, as it is quite possible that we could interest local industrials in using this uptodate process in the Argentine. We handle an American brand of finishes in this market and are, of course, in contact with all possible prospects for finishing materials and equipment.

So, to save time, we request that you kindly forward our name and address to the concerns referred to by Mr. Hiett, asking them to write us giving full details of the screens they are able to offer, if possible sending us a small sample, with full instructions for the use of the screen, especially as regards the materials with which it can be used, that is paints, enamels, synthetic enamels and pyroxylin lacquers or, alternatively, whether the screen can be used only with oil colors or colors

METALPREP
"Used First, Makes Your Paint Finish Last"

- INSURES PERFECT BOND BETWEEN METAL & PAINT.
- MAKES THE METAL SAFE FOR PAINT.

Ideal for preparing Iron, Steel, Aluminum, Aluminum Alloys, Galvaneal, Galvanized Iron, etc., for paint finishes. Has been used on more than ten million units.

Write for Literature Today

Neilson Chemical Co.

6564 BENSON ST. DETROIT, MICH.

Impervious FINISHES *for Industrial Use*

IMPERVIOUS ENAMELS LACQUERS VARNISHES IVCO PRODUCTS

Pyroxylin Lacquers, Baking and Synthetic Enamels, Finishing and Insulating Varnishes, Protective Coatings, Primers and Surfacers, etc.

IMPERVIOUS VARNISH COMPANY, KOPPERS BUILDING, PITTSBURGH, PA.

ground in Japan, suitable for finishing with clear synthetic or pyroxylin finishes.—Industrias Quimicas Argentinas.

Coating Machine; Graining Machine

I believe I saw advertised in one of your back issues of INDUSTRIAL FINISHING a coating machine that handles flat pieces, such as veneer, panels, etc., that coats the bottom, top and edges at one operation. If so, kindly furnish us the name of the manufacturer.

We would also like to know the manufacturer's name of a graining machine suitable for graining the surface of flat pieces such as masonite, etc.—L. M. (Toys & Novelties).

Manufacturers of these machines have been notified.—ED.

Flock Finish

Can you advise us who to get in touch with for spraying metal with cloth finish? We had a demonstrator at our factory several years ago, but forgot the firm. They spray cloth lint through a gun and it gives a finish like felt.—A. J. Co. (Enameling).

This is a flock finish advertised regularly in INDUSTRIAL FINISHING by Claremont Waste Mfg. Co., Claremont, N. H.—ED.

Absorbs Solvent Odors

We would appreciate it if you would give us the name of the manufacturer who makes the apparatus for absorbing solvent odors, as described in the Aug. issue on page 59.—G. C. Co.

It's the Consolidated Air Conditioning Corp., 114 E. 32nd St., New York, N. Y.—ED.

Rowe Paint Co. Move into Larger Plant

Mr. Chadwick L. Rowe, President of the Rowe Paint Co., announces that their new location is now 1210 Jackson Ave., Long Island City. Their new home will provide larger space and increased facilities for service to their customers.

MAGIC TACK RAGS remove specks, lint and sand particles—bring out that deep, smooth luster, produce a faultless surface for white or colored finish. Why use "home made" tack rags when you can buy MAGIC TACK RAGS at trifling cost! They are tackier, do not dry—are dust-proof and spontaneous combustion proof. Packed in dozen and gross lots or more. Made only by the

Wm. A. Juergens Co.
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If your dealer does not carry Magic Tack Rags, write us for sample.

GRAINING PLATES
bring out the
QUALITY *you*
have built in
YOUR PRODUCT
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104 E. MASON ST.
MILWAUKEE, WIS.

Industrial
FINISHING

Distributed to Executives and Foremen Finishers in industrial plants where finishing coats are applied with finishing equipment.

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EDITORIAL

Limiting Cost of Finish

If some reasonable limitation were not placed upon the allowable cost of preparing, painting and decorating the surfaces of manufactured products, costs could easily become excessive. Time, labor, material, supplies and overhead enter into these costs and constant vigilance must be observed to prevent any one or more of these important factors from getting out of hand.

However, the dress-up finish coat of a product is vitally important, not only at the time of sale but afterward when the product is in service. No product is 100% satisfactory if its finish coating deteriorates prematurely. The coating on a product should be of a quality that will assure reasonable durability as well as presenting an attractive appearance when new. On expensive articles the quality and appearance of the finish is even greater in importance. In other words, the sale of any product should be helped rather than hindered by the finish, which is usually the first and last thing the customer sees. If sales are lost because of the finish, then that finish needs to be changed or improved immediately.

With the present wide selection of finishing materials, equipment, supplies and methods available, it is possible to produce and maintain the desired quality in finish coatings—and still hold down the cost of production. Costs are more likely to become excessive when the finishing room facilities are inadequate, and any efforts toward manufacturing economy should be made with this fact in mind. Close observation of routine operations in the finishing room will often reveal the sources of high production costs. If some kind of wastefulness is the real cause of high costs, then it would certainly be a step in the wrong direction to substitute cheaper materials in an effort to cut costs.

Your Choice of Many Different Ways

When you have a specific job to perform or certain results to get, there are usually several different ways of accomplishing it. That's one reason why we read trade magazines—to find out how

others are doing some of the work we do.

While the principles of doing certain work may be identical, the details generally differ according to the experiences and preferences of the respective men who do the work. Recently a truck sign painter, speaking about the application of decalcomanias, declared that if there were 100,000 men applying decals on different jobs, there would probably be 100,000 different ways of doing the work, even though the decal manufacturer's directions on every decal are the same. By this he meant that some details of each man's method would differ slightly from the methods of other men working on different jobs elsewhere.

Much remains to be done toward finding out the most desirable details of every different method used on various classes of work, and then developing a few improved standard methods—this in the interest of getting various types of finishing and decorating performed more effectively and more economically. Progress toward this objective can be made through a more extensive discussion of the methods employed in different factories. What one organization now considers best may be in reality inferior to what others have developed. Once an improved method is developed and adopted, it is always subject to additional improvements as time goes on. It is the same with materials and equipment. Changes and improvements are being made continually. We must read, observe and inquire at every opportunity to keep in touch with this progress which so vitally affects every type of competition.

Air-conditioned Rooms

Air-conditioning systems need to be installed more extensively in wood-finishing rooms. Products made of wood are so easily affected by the condition of the air in which they stand for some time that it is highly desirable to have facilities for controlling temperature, humidity and circulation in the air. For example, here is a typical complaint from a manufacturer of wood products:

"Due to the high temperature in the finishing department we find that certain seasons, especially in the fall and winter, give us excessive dryness and we have not been able to properly correct this by use of open pans of water or steam jets from steam lines. Would you please advise a practical method of raising the relative humidity in our finishing department and maintaining as closely as possible a steady percentage of moisture content."

This company's experience emphasizes how inadequate and unsatisfactory makeshift methods of introducing humidity in the air of the finishing room can be. The moisture content as well as the temperature of the air in the finishing room should be uniform through the entire department all the time. Also, there should be a very gentle circulation of air and the air should be free from dust. This all calls for controlled air-conditioning somewhat similar to what we now have in our modern theaters and department stores. More and more industrial establishments are air-conditioning their finishing rooms. Benefits include uniformity of products, uniformity of finish, uniformity of production schedules, faster

FASTER!

Type BU High Production Airbrush with Snaplock cup for fast airfinishing.

NEW Paasche Air-brush

Saves Air!
Saves Material!
Speeds Production!

Superior finishes—at lower costs—are yours with this new Paasche Type BU High Production Airbrush.

Manufacturers everywhere report finer, faster finishes with all types and kinds of coating materials . . Let us demonstrate—in your own plant—*the greater savings—the faster, more uniform coverage—the better, more attractive finishes.*

Find out now how this new High Production Airbrush will make money for you in your own finishing operations—no obligation. *Send for free bulletin.*

Profit with Paasche

Paasche Airbrush Co
1917 Diversey Parkway
CHICAGO

Most modern and complete AIRFINISHING LINE—automatically and manually operated.

schedules, less sanding or no sanding at all between coats (because there is no flying dust or lint in the air) and better health conditions for the workman.

A number of concerns make a specialty of installing modern air-conditioning systems in industrial plants. Their engineers are experienced in this work and their equipment is guaranteed to operate satisfactorily and economically. What they have to offer should be of interest and value to every wood products manufacturer who has a finishing department in his plant.

Standardizing on Certain Materials and Equipment

One of the important reasons why some concerns prefer to standardize on certain materials and equipment is because of the extreme difficulty of training workmen to use different brands of materials or different makes of equipment effectively. Even though a workman trys conscientiously to produce maximum results when he changes over from one kind of material or equipment to another, he is unlikely to get along as well as he would if he were using the same materials and the same equipment day after day and week after week. This is especially the case where workmen are pushed almost to the limit in standard repetition production work. It's different, of course, in the custom shop where there is variety in the work and where it is necessary to use many different kinds of material.

Commenting on this subject recently, a production executive

connected with a large manufacturing organization declared that his company had standardized on one make of spray guns throughout all of their plants because, he said, "when we find it necessary to transfer one or more spray operators from one plant to another, we want them to be thoroughly familiar with the spray guns they will have to use." Often the same reason applies in reference to the standardization of finishing materials used in large establishments.

Of course, this matter of standardization should not be carried to such an extreme point that it may discourage the trying out of new or improved materials and equipment. Sound judgment must be exercised when deciding upon any kind of standardization. Otherwise progress may be halted.

George Henry Joins V. J. Dolan & Co.

V. J. Dolan & Co., Inc., 1830 N. Laramie Ave., Chicago, Ill., announce that Mr. George Henry has joined their sales organization and will represent them in Illinois, Iowa, and Wisconsin, selling the Dolan line of "Unquestional Quality" lacquers, sealers, stains, fillers, etc. Mr. Henry is an old timer in the business, having sold similar lines in the same territory for many years.

Cast and Wrought Aluminum

It may surprise you to learn that 27 standard aluminum casting alloys are now employed in large tonnages in this country compared with only four such alloys in 1915; and that there are 20 alloys for wrought products now, whereas in 1915 only pure aluminum or an aluminum-manganese alloy were available. Extensive research and experimental work have resulted in a considerable reduction in the cost of producing aluminum (from bauxite ore) and fabricating the metal, during the past 20 years, even in the face of steadily increasing labor and tax rates.

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With over 20 years' experience with large plants in G. R. and the south, desires position. Go anywhere — United States or abroad. Best of reference. Address IF-710, care Industrial Finishing.

TECHNICAL MAN WANTED

Manufacturer of coatings and wood finishes desires the services of man experienced in laboratory research and formulation. This is an opportunity for the right man in well-established plant in South. State age, education, experience and salary desired in first letter. All replies confidential. Address IF-711, care Industrial Finishing.

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With established following, wanted by reputable eastern manufacturer. Attractive proposition for immediate business. State volume and territory covered. Address IF-704, care Industrial Finishing.

SALESMEN WANTED.

Calling on users of Bronze Powders to sell all types of Gold and Aluminum Finishes. Commission basis. Exclusive territory. EDWARD C. BALLOU CO., 6 Varick st., New York.

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Evening classes in Philadelphia in Paints, Resins, Metals and Industrial Processes. Elementary and advanced courses by mail. DR. BROWN, Industrial Consultants, 3404-C Baring st., Philadelphia, Pa.

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One conveyor Bar type oven equipped with electric heating and controls; temperature range 100° to 700°; Connected heating load 30 KW; Width of Bars 66", clearance between bars 28". Adaptable for gas or oil firing. Equipment assembled for inspection. Apply THE CONTAINER COMPANY, Van Wert, O.

Case History No. 10

A manufacturer of metal novelties requested the development of a finish that would take advantage of the rough surface of the metal rather than to make a poor job of an attempted smooth finish. The low price of the novelties required a finish that was comparatively inexpensive, easy and quick to apply.

The finish developed was produced by a two coat spray application of a material that dried in ten minutes. To look even more effective on rough metal, the coating was developed to give a speckled appearance—the finish coat being of a different color than the first coat, and both colors showing. In view of the attractive color effect of this new development, the product is known as the "two-tone finish" and may be supplied in practically any color harmony.

Manufacturers of metal novelties, toys, furniture, fixtures, or others interested in this problem, or in a specific problem of their own, are invited to write, furnishing all details, to — INDUSTRIAL RESEARCH, DIVISION OF WIPE-ON CORPORATION, 105 HUDSON STREET, NEW YORK. A complimentary copy of "Case Histories" will be sent describing non-discoloring white metal finishes; burnproof enamels; eyelet coatings; 10 minute air dry metal finishes; magnesium alloy finishes; airplane finishes; seam compound; and coatings to resist alkali, alcohol and acids; together with a solution of the problem submitted.—Adv.

Soaps and Detergents

Committee D-12, Soaps and Detergents, American Society for Testing Materials, will meet at the Hotel New Yorker on Oct. 31 and Nov. 1. Section G on metal cleaning of Sub-Committee II will meet to discuss plans for future work. The work of the committee is of direct interest to the metal trades since specifications for materials used in cleaning are under preparation. A number of tentative specifications have already been submitted and others are being prepared.

Plastics Division of Monsanto Chemical Co.

The Fiberoid Division (Indian Orchard, Mass.) of Monsanto Chemical Co., St. Louis, Mo., will be known hereafter as the Plastics Division, according to an announcement by John C. Brooks, Vice President in charge. Fiberloid was acquired by Monsanto on April 1, 1938, its former management and personnel being continued without change by Monsanto.

Durable Outside Greens and Blues

Brilliant light green and light blue paints for outdoor use, which will not fade, have been made possible through the development of new color pigments, according to Miles A. Dahlen, a duPont Co. chemist.

The new substance introduced by Dahlen is a pigment nearly 20 times as strong as some of the colors formerly used. It represents, he said, the first time that permanent bright blue to green shades can be made available for the various objects which will be subjected to the destructive influences of light, acids and alkalies. The chemical name for the new group of pigments is the "phthalocyanines."

Mearl Corp. Occupy Larger Quarters

Mr. H. E. Mattin, President of the Mearl Corp. of New York City, Roselle, N. J., and Eastport, Maine, announces that the company moved to their new home in New York on October 1st. It is located at 153 Waverly Place, and provides about five times as much floor space as their former quarters. They have consolidated their New York offices and laboratories under one roof. Mr. Mattin advises that the recent hurricane did very little damage to their factory at Eastport, Maine.

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Practical Japanning and Enameling

HERE is the first authoritative handbook of its kind, containing much information that has never before been published. You will find between its covers facts, processes, and formulae that have been considered secret by many japanners.

The author has actually been doing this work for others for many years and he knows whereof he speaks. No one has ever gone into the subject of metal finishing more deeply than he nor has the subject ever been explained so clearly and effectively. This book was eight years in preparation.

Color plates and a multitude of tables and illustrations make the text even more clear and understandable. The volume is bound in harmony with its companions of the Practical Finishing Series and makes a rich, attractive appearance . . . 22 chapters.

Price $3.50 . . . . *money refunded if book is not satisfactory*

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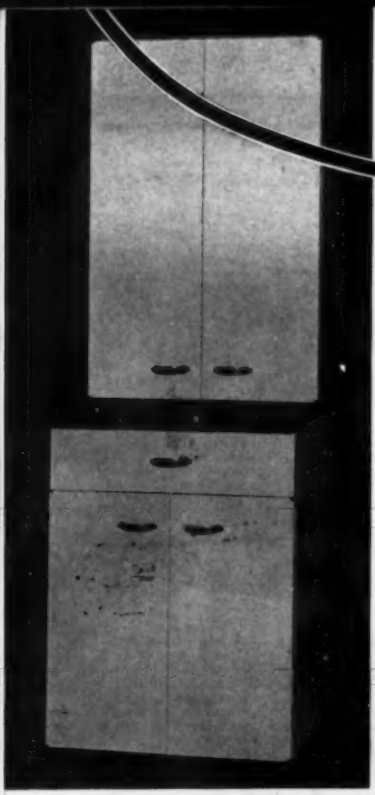

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Advance

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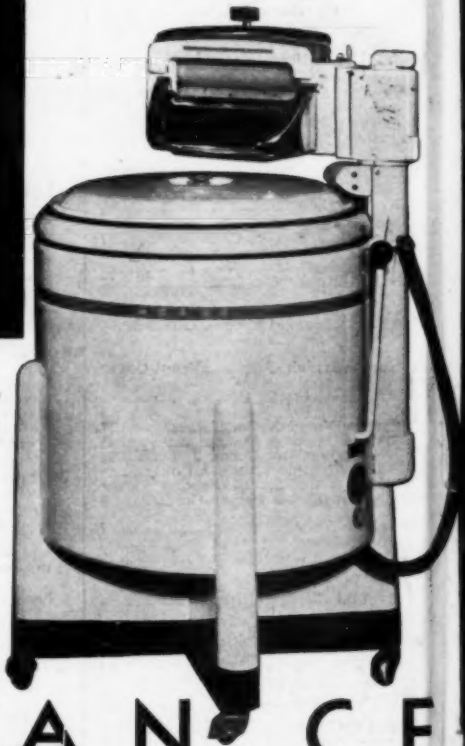

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